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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*A New Method of Reduction in Dislocations at the Elbow-joint.* By J. E. KELLY, F.R.C.S.I., M.R.I.A.; Surgeon to Jervis-street Hospital; Lecturer on Surgery, Ledwich School of Medicine, Dublin, &c.

DISLOCATIONS at the elbow-joint are generally reduced without much difficulty, but the operator occasionally encounters an amount of resistance which demands the application of the pulleys or the aid of assistants. In other instances, in which a complicating fracture is suspected or recognised, considerable force may be essential to the diagnosis or the treatment, and it is expedient that, while perfectly under control, this power should be applied with great steadiness. Again, in long-standing dislocations, accompanied by extreme rigidity and consequent loss of function, authority, with the object of permitting efficacious treatment by passive motion, sometimes sanctions the fracture of the olecranon process. In any of those contingencies the following procedure permits of the necessary treatment in the most satisfactory manner.

The operator sits on the corner of a table, at the end of which the patient is placed upon a chair (Fig. 1). The injured limb is drawn under the surgeon's proximal thigh, which rests, close to the joint, on the anterior surface of the humerus, while the olecranon is accurately placed on the anterior surface of the lower third of the distal femur, and the proximal foot is

"hitched" behind the other leg, which is flexed firmly against the frame of the table. In order to obtain the most favourable fulcrum, the surgeon fixes his proximal elbow against the antero-internal aspect of his corresponding thigh,[*] and, grasping the wrist of the patient with both his hands, reduction is effected by the simultaneous and co-operative action of the muscles of the arms, back and thighs. Fixation and counter-extension are supplied by the powerful thighs of the operator, and coaptation is effected, with great nicety, by the backward pressure of the proximal femur against the anterior surface of the humerus, while the distal femur forces the olecranon forwards. Owing to the accuracy

Fig. 1.

with which it can be applied, this power, which is incalculably greater than that afforded by the pressure of the fingers and thumbs (Boyer), is sufficient, when the forearm is steadied, to reduce an ordinary dislocation without the aid of extension. Additional adjusting influence is exercised by the inner side of the proximal thigh, which by pressing against the anterior surface of the forearm, liberates the coronoid process from its position behind the lower extremity of the humerus, and allows the greater sigmoid cavity to resume its normal relation to the trochlea. Extension is supplied by the muscles of the upper extremities acting round the fixed point provided by the elbow of the surgeon, and, when his

[*] This is not correctly shown in Figs. 1 and 2.

body is thrown backwards, additional force is derived from the muscles of the back, the glutæi, and the other extensors of the thighs. This power may be applied at various angles in rapid and easy succession, an advantage which the surgeon experienced in the treatment of dislocations cannot fail to appreciate.

Fig. 2.

In the lateral modifications of the posterior luxations the reduction is generally effected by the same manœuvre which is employed for the simple form of dislocation, but should special coaptation be necessary, it is at the disposal of the operator, as, when aided by the powerful constraining pressure of the thighs, the proximal hand can supply sufficient traction and stability, while the other is unoccupied and in the most advantageous position to apply any additional manipulation (Fig. 2), which may, if desirable, be afforded by an assistant. If the condition be such that the full extending force of both arms be required, the isolated rural surgeon can, with a little ingenuity, render himself independent of professional aid by fixing the bone of the arm or forearm, which is displaced inwards, by a bandage passing round his own loins, and by making lateral traction on the bone or bones displaced outwards, by another bandage attached to his foot, and passing over his knee, as over a pulley. By this simple apparatus the instinctive movements, which are essential to the reduction of the

simpler luxations are utilised for the treatment of the more complicated forms.

Fig. 3.

For the anterior dislocation, of which the writer has had no personal experience, the following modification of the foregoing method is proposed, as being rational and obviously advantageous. The operator and patient being placed in the same relative positions (Fig. 3), the arm of the latter is passed *over* the proximal thigh of the surgeon, while his distal thigh is placed in the anticubital fossa; the distal foot is "hitched" behind the other leg, and the proximal elbow placed upon the shoulder of the patient. The arm being fixed, and the forearm pressed against by the distal thigh, the operator, grasping the wrist as in the former manœuvre, makes traction upon it in the most desirable direction, and, flexing the forearm over the thigh, he liberates the olecranon from the anticubital fossa, when the reduction is completed by the spasmodic action of the patient's triceps, aided, if necessary, by the operator, who forces the forearm backwards.

In addition to the desire to place at the disposal of the surgeon another method of dispensing with pulleys, assistants, and anæsthesia, the purpose of this paper is to direct attention to the undeveloped mechanical resources of the human body. The utility of the powerful muscles of the lower extremities in supplementing

the strength of the upper, is a topic worthy of consideration, and experience has enabled the writer to commend it most warmly to the attention of his professional brethren.

Art. II.—*A Case of Lateral Sclerosis of the Spinal Cord.* By

James Alexander Lindsay, M.A., M.D., M.Ch., Roy. Univ. Irel.; Resident Physician, Belfast Royal Hospital.

The time has almost come when it is no longer necessary to plead for a more careful study of nervous diseases even on the part of the busy general practitioner. Our knowledge, both pathological and clinical, of this department of medicine has gained in recent years so enormously, both in extent and in exactness, that it is no longer possible for anyone to neglect a branch of medical science abounding in interest and affording an unrivalled field for the exercise of those powers of observation which are the most striking characteristic of the skilled physician. Yet there are some who still deprecate the expenditure of much time and labour in the investigation of nervous diseases, and apparently on two grounds—first, that the diagnosis of such disease is often obscure and difficult; and secondly, that even if a correct diagnosis be established, treatment is of little or no avail. The first argument had better be given up by those who would shun the imputation of laziness and ignorance. The diagnosis of nervous disease, no doubt, presents very special and peculiar difficulties, but it is being pursued, both in this country and on the Continent, with extraordinary zeal and with distinguished success. Take, for example, such a disease as posterior sclerosis or locomotor ataxia. The last generation of observers scarcely recognised its existence; now our knowledge of the marvellous assemblage of symptoms presented by this malady is minute in its exactness, and far exceeds that which we possess of many familiar diseases which have been under observation from time immemorial.

The second argument—that the treatment of nervous disease is disheartening—is one of those arguments which prove too much. If our clinical studies are to be confined to those diseases in which treatment is strikingly and unquestionably efficacious, the range of our observations is likely to be somewhat limited. Granting to the fullest extent that it is in the realm of nervous disease that therapeutics exhibits its most conspicuous failures, such a fact is no sufficient excuse for the neglect of this department of study—

first, because as our knowledge of pathology and symptomatology grows more perfect we may hope that our treatment will become more successful; and secondly, because therapeutics is not the sole end of diagnosis. The importance of a correct prognosis cannot in many cases be over-estimated, and it is highly characteristic of nervous diseases, that while treatment is purely empirical and so far unsuccessful, the prognosis in most cases admits of a high degree of certainty.

In no department of nervous disease has such progress been made within the last decade as in diseases of the spinal cord. Until recently these affections, so multiform in their symptoms, so pregnant with signs of vital import regarding the life and happiness of the individual, were imperfectly recognised and frequently confused with each other; but order has begun to evolve from this chaos, and the great results already achieved are full of hopeful augury for the future.

It is to one of these diseases that I propose to direct attention; and I shall first relate, as briefly as possible, the clinical history of the case:—

Case.—James M. was admitted to the Royal Hospital, Belfast, on April 21st, 1883. He was suffering from almost complete loss of power over the lower extremities, with marked rigidity of the muscles. There was some weakness of the upper extremities, with wasting, but in other respects he felt perfectly well. The history elicited was as follows:—The patient was thirteen years old on the 25th of last January. He has long suffered from glandular enlargements in the neck; but, with this exception, he had excellent health until about two years ago, when he was confined to bed for three weeks with severe pain in the back, between the shoulder-blades. He attributes this illness to an immersion which he had twelve months previously, in consequence of the ice giving way on the pond where he was sliding. He had no symptoms of any kind at the time, but is fully convinced that his illness, twelve months subsequently, was due to the wetting then received. The most careful inquiry failed to draw any account of this illness beyond the one fact of severe pain high up in the back. The pain did not extend to the arms; there was no loss of power, nor had he any febrile symptoms. In the course of six months he made a perfect recovery. About this time, or soon after, patient began to remark a curious trembling of the legs, which was excited if he sat upon a chair and touched the ground with his toes, but ceased when his heels were also pressed to the ground. He suffered little inconvenience from this symptom, and considered himself quite well until about last November, when he began to have pains in the left

elbow, and almost simultaneously with the onset of pain the left arm became weak, and he noticed that the muscles were beginning to waste. He thinks the pain, weakness, and wasting, were developed *pari passu*, and cannot assign any order to the advent of the symptoms. After a short time the same symptoms took place in the right arm. He was employed at the time in rope-works, and soon became unfit for his duties. He never had any tremors in the arms, nor any marked rigidity, though he thinks the muscles felt rather hard. He had some cramps and a feeling of stiffness in the fingers.

He gave up work in November owing to the weakness of the arms, and about this time his voice became rather feeble and husky, and has continued thus until the present. About the last week in January numbness began in the left foot, and a few days later in the right, and sensibility has continued impaired up to the present. About a week after the commencement of the numbness he became unable to walk owing to a rapidly-developing rigidity of the lower limbs, and was confined to bed until admission into hospital.

Present State.—The patient lies in bed, usually on the back or on the right side, and is unable to shift his position without assistance. He is well nourished, eats and sleeps well, is quite cheerful, and answers questions readily and with considerable intelligence. His legs are generally flexed on the thighs, and are so rigid that it requires considerable force to extend them, which the patient is usually quite unable to do of his own accord. More rarely the legs are found in a position of rigid extension, the patient being then generally quite unable to flex them. Occasionally he regains a very limited degree of flexion and extension, but soon loses it again. The muscles of the leg and thigh feel hard and tense to the touch, but are well developed, and show no trace of wasting. The condition of the muscles of the upper extremities is quite different. They feel soft and flexible, and there is marked wasting, and considerable loss of power. The rest of the muscular system presents no abnormality. The movements of the head and neck are perfect, and the patient retains complete command of the tongue, the eyeball, &c. Fibrillar twitchings may be frequently observed in the muscles of the legs. Sensation is notably affected. In the lower extremities tactile sensibility is greatly impaired, and at times almost lost, but it undoubtedly varies from day to day. The upper limit of diminished sensibility is not very easy to fix, the patient himself believing that he is affected from the umbilicus downwards. Tactile sensibility seems perfect in the upper portions of the body, including the arms. On the other hand, sensibility to heat is much increased in the legs. The patient informed me that for some time previous to admission he used to feel a scorching sensation in the legs when sitting before an ordinary fire, and on trying him with heated test-tubes the sensibility to heat was found to be very acute from the

thighs downwards. The sensibility to pain does not appear to be materially affected either by way of excess or deficiency. Electrical sensibility seems good in all parts, but the contraction of the muscles in response to the constant current is very defective in the legs, while remaining about normal in the upper extremities.

The patient suffers scarcely any pain; but when his legs remain long fixed in one position there is some aching on the anterior surface of the thigh if the limbs have been in the flexed, and on the upper surface of the foot if in the extended, position. As regards reflex action there is a marked difference between the superficial and deep reflexes. Of the former the plantar is the only one I have succeeded in obtaining after repeated trials, and even it is sometimes difficult to elicit. The cremasteric, gluteal, abdominal, epigastric, and scapular reflexes seem quite absent. The deep reflexes are present in a very marked degree. The patellar tendon reflex, or knee-jerk, is greatly exaggerated in both legs, but is sometimes difficult to obtain owing to the muscular rigidity. Ankle clonus can be very easily excited in both limbs, and is remarkably well developed. There has never been any bladder or rectal trouble, and the urine presents no abnormal features.

I have made a careful examination of the eyes, and the results of my observations have been confirmed and extended by the kind assistance of Dr. Nelson. The pupils are usually rather dilated, but respond readily both to light and to accommodation. There is at present some inequality between the pupils, which has only appeared since atropine was used for the purpose of ophthalmoscopic observation. The fundus in both eyes is rather pale, and the arteries are small relatively to the veins. There are one large and several smaller hæmorrhages visible in the left eye, and there are some chorioidal changes in each fundus, near the margin of the optic disc. The disc itself presents in both eyes some commencing atrophy, especially distinct at its outer margin, and faintly discernible at its inner edge. This atrophy is particularly important and interesting, as it does not occur in a case of pure lateral sclerosis, and, in conjunction with the other abnormal symptoms presented by this patient, may point to some implication of the posterior columns.

There can be no doubt that the symptoms in this case are mainly due to changes—probably sclerotic—in the lateral columns of the cord, but such an assumption does not definitely fix the diagnosis. Four hypotheses might be advanced—

1. That it is a case of primary lateral sclerosis.
2. That it is a case of lateral sclerosis secondary to some cerebral lesion.
3. That it is a case of lateral sclerosis secondary to some lesion of the cord.

4. That it is a case of multiple sclerosis mainly affecting the lateral columns.

The second hypothesis may be dismissed at once—the facts that the symptoms are bilateral, and that there is no history of any cerebral disease, being conclusive against it. The remaining three hypotheses cannot be so readily disposed of. Our knowledge of the differences between primary and secondary lateral sclerosis is not very exact, and multiple sclerosis is a disease which assumes such various forms that it is difficult to exclude it. On the whole, the evidence is against the probability of multiple sclerosis in this case. Some of the most striking features of that disease—such as tremor of all the affected parts on voluntary movement, nystagmus, syllabic articulation, vertigo, hebetude, &c.—are absent, or very slightly developed. The question thus narrows itself down to the issue of primary *versus* secondary lateral sclerosis, and in view of the history the latter seems the more probable. The severe and long-continued pain which the patient suffered from two years ago points to some disease of the cord taking origin about that time. What, then, was the probable nature and site of this disease? It must have finally involved the anterior cornua at the point of origin of the nerves going to the brachial plexus, as it was followed by wasting of the muscles of both arms, yet the history elicited bears but a slight resemblance to that of an attack of infantile paralysis. Again, are we to suppose that disease beginning in the anterior cornua in the cervical region was followed by sclerotic degeneration of the lateral columns in the dorsal portion of the cord? Charcot is of the opinion that where lateral sclerosis and degeneration of the anterior cornua coexist, the former is always primary, but in the present case the sequence of events would seem to be in the reverse order. The question hardly yet admits of dogmatic statement.

There is a form of lateral sclerosis—the sclérose latérale amyotrophique of Charcot—which begins in the cervical region, and spreads thence upwards to the medulla and downwards to the lumbar portion of the cord. It is characterised by paralysis, rigidity, and atrophy of the upper extremities, then by the development of a similar assemblage of symptoms in the lower extremities, and finally the medulla becomes involved, and we get paralysis and atrophy of the tongue and lips, followed by weakness of the muscles of the palate, pharynx, and larynx.

This is a form of sclerosis which we can hardly exclude with

certainty from the case before us. So far the decisively characteristic symptoms have not developed, though the feeble and husky voice of the patient might point to the implication of the medulla, and to the gradual onset of the phenomena which usher in the fatal issue of the amyotrophic form of lateral sclerosis.

I now propose to pass in review the most striking features of the case before us, endeavouring to explain them as fully as the present state of nerve pathology permits. I shall consider, firstly, the condition of the muscles as regards rigidity and atrophy; secondly, the anæsthesia; and, lastly, the very interesting group of reflex phenomena.

Rigidity.—Of all the symptoms in lateral sclerosis, none is more constant or better marked than the rigidity of the muscles. In the present case the rigidity of the muscles of the lower extremities is very extreme, but variable within narrow limits. Usually the legs are firmly flexed on the thighs, and the power of voluntary extension is almost entirely lost. It requires very considerable force to extend the legs, but nevertheless complete extension can be obtained, and then the patient is usually quite unable to flex the legs. Occasionally, however, he regains to some slight degree the power of flexion and extension, only to lose it speedily again. He retains some power over the hip-joint. What is the explanation of the rigidity in this case? It seems certain that it cannot be due to any changes in the muscles. No such changes have been described, and in the present instance the rapid onset of the rigidity, and the fact that it can be entirely overcome by force, are decisive against the existence of any permanent contractions in the muscles. The cause, then, is not peripheral, but central. If central, the further question arises whether it is spinal or cerebellar—the former being the usual view, the latter the opinion of so great an authority as Hughlings-Jackson. The former view is that the rigidity is of the nature of spasm, and is due to the hyper-activity of the reflex centres in the cord. In health these centres are held in check by cerebral influences transmitted to them along the path of the lateral columns, but in lateral sclerosis the cord is cut off from the inhibitory action of the brain, and so the reflex centres, being unbalanced, constantly exercise an unchecked predominance. The second view is that the rigidity is due to what Jackson calls "unbalanced cerebellar influx," the influence of the cerebrum being cut off, and that of the cerebellum being proportionately augmented. In order to understand

this view, we must remember that in lateral sclerosis the degenerative process does not attack the whole transverse area of the columns. There is a zone to the outer margin of the lateral columns which escapes, and the fibres of this zone were believed by Flechsig and many subsequent observers to be connected with the cerebellum. But it is disputed whether these fibres are afferent or efferent in function. The former is the opinion of Bastian; the latter—adopted by Gowers—would harmonise with Jackson's view that along this tract the unbalanced impulses of the cerebellum pass to the muscles in cases where the cerebral influence is interrupted by sclerosis of the lateral columns.[a]

Atrophy.—I do not propose to say much on this head, as the wasting of the muscles of the arms present in this case is not a characteristic sign, but only an accidental complication of lateral sclerosis. It is, no doubt, due to nutritive disturbance of the anterior cornua or the anterior roots, but it is mainly interesting to us at present as bearing on the question (to which I have already alluded) whether such degeneration, in cases where it is present with evidences of lateral sclerosis, is primary or secondary. The facts of the present case, so far as they go, tell rather against the view of Charcot that the disease in the anterior cornua is always secondary.

Anæsthesia.—There is marked loss of sensibility in this patient in the lower extremities, and though this is also an exceptional feature in lateral sclerosis, I propose to devote a little time to its consideration, as the testing of sensation is a matter of considerable delicacy, and requires not only much patience on the part of the observer, but some care and a fair amount of intelligence on the part of the patient.

[a] It must be admitted that there is one fact which tells heavily against the view that this cerebellar zone is efferent. We know that in cases of transverse lesion of the cord an ascending degeneration travels up the cord, attacking mainly the posterior median columns, but also involving the cerebellar zone; and we know also that these secondary degenerations travel usually, if not universally, in the direction of the function of the parts involved. The fact therefore that the degeneration of the cerebellar zone spreads towards the brain is strong presumptive evidence that the function of this part is afferent and not efferent. Bramwell lays down the following points as diagnostic between primary and secondary lateral sclerosis. In the primary disease:—1. The onset is excessively chronic. 2. Motor weakness and rigidity are developed together. 3. There is no muscular atrophy at the upper level of the paralysis. 4. There are no sensory disturbances. 5. The bladder and rectum continue normal. On the other hand, in the secondary form the following points are to be noted:—1. The onset is much more rapid. 2. Motor weakness precedes the rigidity. 3. There is some muscular atrophy at the upper level of the paralysis. 4. Anæsthesia is usually present. 5. The bladder and rectum are frequently affected.

Sensation is a complex affair, and consists of, at least, three elements. There is sensibility to touch, sensibility to pain, and sensibility to temperature. These three activities are frequently affected in an entirely opposite manner—the diminution of one being often coincident with the exaltation of the others. Thus in anæsthesia the sensibility to touch is diminished or lost, while the sensibility to heat is frequently exalted. Again, it is not very uncommon to find the sensibility to touch perfect, while there is great impairment of the sensibility to pain—a condition to which the title of analgesia has been applied. Such facts as these, corroborated by the results of experimental research, have led to the belief that there are various paths for sensation in the cord, and the most recent view is that the sensation of pain travels by the gray matter—that of touch and temperature by the posterior columns. Recent observers assert that in some of the lower animals sensation travels partly by the lateral columns, but no facts have been adduced to prove that such is the case in man, and I am therefore disposed to regard the anæsthesia in the present case as not due to the disease of the lateral columns, but to the spread of the sclerosis to other portions of the cord. The case before us illustrates some of the anomalies of sensation to which I have alluded. The sensibility to touch is notably diminished—that to heat proportionately increased. I am rather doubtful as to the exact condition of the sensibility to pain, but am disposed to regard it as normal. In testing sensation there are several other points worthy of our attention. There is—

1. The quantity or degree of the sensation.
2. The quality or kind of the sensation—thus tactile sensibility may be perverted in various ways.
3. The localisation of sensation; and lastly—
4. The rapidity of transmission of the sensation.

To consider these points adequately would require more time than I can devote to them. Let me commend them to your attention, and more particularly the last point mentioned. There can be no doubt that mistakes often arise by sensation to touch or heat being pronounced defective, while it is really quite normal in amount, but simply delayed in transmission.

I turn next to the subject of reflexes—a group of phenomena which has already given us much aid in diagnosis, and which is probably destined still further to extend our knowledge of nervous diseases. Caution is, however, highly necessary in our deductions

from the various pathological abnormalities in reflex action, as there can be no doubt that in the enthusiasm of a new discovery many hasty conclusions have been drawn which subsequent observation has tended greatly to modify. Reflex action, like electricity, is capable of affording us valuable help, but it will fail, as electricity fails, if it is regarded as a sort of magic spell sufficient of itself to unlock all the mysteries of nervous disease.

We have to deal with two kinds of reflexes—the superficial or skin reflexes, and the deep or tendon reflexes—presuming for the moment that the latter phenomena are truly reflex in character, a presumption which is at least open to very considerable doubt. Of the skin reflexes the following are enumerated :—

1. The plantar reflex—viz., movements of the toes, or of the toes, foot, and leg, excited by tickling the sole of the feet.

2. The gluteal reflex—viz., contraction of the glutæi muscles, excited by irritation of the skin of the buttock.

3. The cremasteric reflex—viz., the drawing up of the testicle, excited by irritation of the skin of the upper and inner part of the thigh.

4. The abdominal reflex—viz., contraction of the abdominal muscles, excited by irritation of the skin of the abdomen.

5. The epigastric reflex—viz., a dimpling of one side of the epigastric region, excited by stroking the skin of the chest over the 5th and 6th intercostal spaces.

6. The scapular reflex—viz., contraction of the posterior axillary fold, excited by irritation of the skin in the interscapular region.

Of the so-called deep reflexes two claim our attention :—

1. The patellar tendon reflex or knee-jerk—viz., a single upward jerk of the leg and foot, excited by striking the patellar tendon with the edge of the hand or the percussion hammer whilst the leg hangs loosely over its fellow or over the forearm of the operator, also by striking the quadriceps muscle above the patella.

2. Ankle-clonus—viz., a series of clonic contractions at the ankle-joint, excited by extending or slightly flexing the knee, and then pressing quickly and firmly against the anterior part of the sole of the foot (so as to stretch the calf-muscles), and then keeping up the pressure.

I borrow the above tables from Charlton Bastian's article in Quain's "Dictionary of Medicine."

Is there any inter-relation or correspondence between these two

varieties of reflex activity? We shall find that there is no necessary relation, but that, on the contrary, either variety may be increased, diminished, or lost, without any corresponding change, or with, it may be, a change of an exactly opposite character in the other variety. In infantile paralysis both varieties are greatly diminished or quite lost. In some forms of paraplegia both varieties are markedly augmented. But as against such facts we have the following:—In many cases of hemiplegia we find the superficial reflexes lost, but the deep reflexes exaggerated. In posterior sclerosis or locomotor ataxia the absence of the deep reflexes is one of the most constant and important symptoms, but the superficial reflexes may be impaired or augmented, or may remain normal. In lateral sclerosis, on the other hand, the deep reflexes are greatly exaggerated, while the superficial reflexes may be almost entirely lost, as in the case before us.

From such facts one of three conclusions must be drawn—

1. That the superficial or the deep reflexes are not truly reflex in character; or,

2. That the path of sensory and motor impulses is different in the two cases;[*] or,

3. That the brain exercises some influence in one case which it does not exercise in the other.

These suggestions open up a wide field for speculation, from which, however inviting it may be, I must at present turn away. Dismissing, then, the question of the differences between superficial and deep reflexes, while emphasising the clinical evidence of their independent variation, let us turn to the subject of reflex action in general and to the instruction which may be derived from the reflex abnormalities present in states of disease.

Reflex action is more vigorous in the young than in the old, in women than in men, in those who are called "nervous" than in the sluggish and phlegmatic. It is active during sleep, and possibly in all states of unconsciousness. It occurred to me recently to test the reflexes of a patient while under chloroform for the purpose of operation. I found the cremaster reflex well developed,

[*] This is the most probable explanation. Byrom Bramwell, in the admirably lucid and concise account which he gives of diseases of the cord in his work upon the subject, suggests that the sensory impressions for the superficial reflexes enter the gray matter directly by the posterior roots, and that those for the deep reflexes enter by way of the postero-external columns. The present paper was written before I had the advantage of consulting Bramwell's work. I find, however, that his account of lateral sclerosis confirms the view I have taken of the above case.

but the knee-jerk could not be obtained—a fact probably attributable to the circumstance that in this case there was only a very incomplete degree of muscular relaxation.

The information which the presence of a certain reflex gives us is very limited in its range, but yet most valuable. It shows us that the afferent impulse is safely conveyed from the peripheral point to the cord, that the reflex arc in the cord is intact, and that the path of the efferent impulse along the motor nerves is unimpeded. The various reflexes thus give us the means of testing the condition of the cord at almost any point—a fact which gives these phenomena their whole significance.

Let me indicate what the loss of reflex action teaches us; and I shall take as an illustration the patellar tendon reflex, because it has been very carefully studied, and we possess fairly complete and accurate knowledge regarding it. I feel justified in selecting this as a type, although its purely reflex character is open to doubt, because it is admitted by all that the lesions which prevent reflex action *pro tanto* prevent the development of the knee-jerk. It is evident, on theoretical grounds, that reflex action may be annulled by an impediment occurring anywhere in the reflex path. Practically we may confine ourselves to—1. Impediments to reflex action occurring in the course or distribution of the nerves involved; and, 2. Impediments occurring in the cord.

Thus, in pseudo-hypertrophic paralysis, the loss of the knee-jerk is probably due to conditions affecting the distribution of the nerves to the muscles. In experimental section of the nerves to the quadriceps muscle the loss of the knee-jerk is obviously the result of direct interruption of the nerve-currents.

The spinal causes of the loss of the reflex fall into three categories:—1. Cases where there is a lesion affecting the entire transverse area of the cord, as in some instances of paraplegia; 2. Cases of sclerosis of the posterior columns; 3. Cases of degeneration and atrophy of the anterior cornua.

As regards the first of these, it is easy to understand why there is an abolition of the reflex if the transverse lesion of the cord occurs at the point of entry of the afferent nerve involved; but Bastian is of opinion that in lesions of the cord in the cervical region there may be abolition of all the reflexes depending on the lower portions of the cord, though, as he adds, this view is contrary to the usual belief.

The loss of the knee-jerk in posterior sclerosis or locomotor

ataxia is apparently attributable to an interruption of the reflex arc on its sensory side. We know that the fibres of the posterior roots, before entering the gray matter, pass to a considerable extent through the postero-external columns, or posterior "root zone" of Charcot. It is this portion of the posterior columns which is exclusively affected in many cases of posterior sclerosis, and the loss of the reflex may be fairly explained by the bar to the passage of sensory impressions presented by the sclerotic degeneration.

Turning to infantile paralysis we find a different condition of affairs, the interruption to the reflex impulses occurring here in the motor portion of their path. The sensory impulse passes safely along the nerve, enters the gray matter of the cord possibly by way of the postero-external columns, traverses the fine network of fibres and cells comprising the central portion of the gray matter, and reaches the anterior cornua, where the existing disease prevents the origination of motor currents.

When we come to consider the conditions in which there is found an increase of the patellar tendon reflex, as in lateral sclerosis, hemiplegia, &c., we enter a more debatable and shadowy region in attempting any adequate explanation. The most generally received opinion is, that in all cases of an exaggerated knee-jerk there is sclerosis of the lateral columns interrupting the inhibitory influence which the cerebrum normally exerts over reflex action. That such an influence is exerted by the brain we can hardly doubt. We are all conscious that the will does exercise a restraining power over the reflexes. It cannot originate, neither can it entirely annul them, but it can alter and modify them in various degrees. So much is certain, but the increase of the knee-jerk might be due not merely to the withdrawal of the restraining influence of the cerebrum, but to the bringing into play of a new force—viz., that of the cerebellum. This view, to which I have made previous allusion, was originated by Hughlings-Jackson, and is at the lowest estimate a very fascinating speculation.

I shall next deal as briefly as possible with that phenomenon known as the ankle-clonus, to which we shall not be wrong in attributing great pathological significance.

I have already stated how it may be most certainly elicited; but in extreme cases, as in the patient before us, the clonus may be excited by attempts at voluntary movement, by a tap on the calf-

muscles, and even sometimes by tickling him over the sciatic nerve. The contractions occur at the rate of from six to ten per second. The clonus may be arrested sometimes (but certainly not always) by simple withdrawal of the pressure of the hand against the patient's toes, invariably by sharp flexion of the toes, but not—at least in the present case—by flexion of the great toe alone, according to the statement of Brown-Séquard. That the phenomenon is reflex in character seems probable; but Buzzard's view, that the recurrence of the contractions is explained by the pressure of the operator's hand causing a separate reflex act for each contraction, is disproved by the fact that in exceptional cases the clonus continues after the pressure is withdrawn. It may be that the sudden flexion of the toes which puts the tendo-Achillis on the stretch, sets up some rhythmical action in the nerve-centres; but such a speculation is of course only guess-work.

The ankle-clonus differs from the knee-jerk in the fact that the latter is present in health, while the clonus is essentially a symptom of disease. But when we come to inquire whether the latter is only found in cases of structural changes in the cord, we are confronted with a divergence of opinion. Gowers inclines to this view; but, on the other hand, Buzzard has found the clonus well developed in cases of hysteria where the subsequent recovery was perfect, in cases of paraplegia which ultimately disappeared; and Hughlings-Jackson has recorded a case of the clonus occurring in a patient immediately after an attack of unilateral convulsions. As regards the first of these points, it is always our duty to view with suspicion any argument drawn from any presumed hysterical phenomenon. The term hysteria, like the term struma, has been used to cover a multitude of sins—sins, that is, of diagnosis, and there is no doubt if we could eliminate those cases where there is structural disease and those where structural disease is complicated by hysterical phenomena, the residue would be small. Still the authority of Buzzard is too high to be lightly impugned, and I would therefore suggest, as a suitable subject for research, whether ankle-clonus ever occurs in cases of pure hysteria where we can eliminate with tolerable certainty the co-existence of organic nervous disease.

Buzzard's case of clonus in a paraplegic patient who recovered perfectly would, of course, be easily explained if we can admit there were structural changes in the cord which ultimately disappeared, and it is worthy of note that in this instance the clonus

ceased to be developed with the amelioration of the general symptoms of the disease.

The instance recorded by Hughlings-Jackson of clonus occurring in a patient immediately after an attack of unilateral convulsions, is full of interest. His explanation is that the convulsions had caused temporary exhaustion of the lateral columns, which thus failed to transmit the inhibitory influence of the cerebrum, but it would be hard to prove certainly that the patient had no cord disease.

It is a matter alike of interest and importance to determine the exact clinical value of the ankle-clonus. At present I think we may safely conclude that if it is well developed, and persists for a considerable time, there is probably organic disease of the cord. If it be slight, we should perhaps wait until we see if it persists before basing a positive opinion upon it.

A very interesting point connected with the ankle-clonus was brought forward at a recent meeting of the Edinburgh Medico-Chirurgical Society—viz., that the rapidity of the clonus was in inverse ratio to the height of the individual—a fact that was regarded as strongly corroborating the view of its reflex character.

As regards the treatment and progress of this case a few words will suffice. He was treated first with the iodide, and then with the bichloride of mercury, but any occasional amelioration of his condition proved of transient duration, and the prognosis in this, as in most, if not all, cases of lateral sclerosis, leaves little hope for anything but a steady, if slow, aggravation of his symptoms until death shall close the scene.

ART. III.—*On the Nature of the Phosphatic Precipitate obtained upon Heating Urine.* By WALTER G. SMITH, M.D.; King's Professor of Materia Medica, School of Physic, Trin. Coll. Dubl.; Physician to Sir Patrick Dun's Hospital.[a]

THE fact that clear urines, free from albumen, and neutral or even faintly acid in reaction,[b] frequently become turbid upon heating is familiar to every one. The turbidity readily and completely disappears upon the addition of a few drops of dilute acid;

[a] Read before the Dublin Biological Club, April 24th, 1883.

[b] Acidity of healthy normal urine is probably due (*a*) to acid phosphate of Na; (*b*) acid urate of Na; and (*c*) ? to free aromatic acids.

and this test points to the phosphatic nature of the precipitate, and precludes any possible risk of mistaking it for an albuminous haze, which it closely resembles in appearance. So far as I know, only three explanations of the cause of the turbidity have been put forward:—

1. That the precipitation is occasioned by the heated urine becoming alkaline owing to conversion of some of the urea into ammonium carbonate.

2. That the phosphatic salt is thrown down owing to the expulsion of the free CO_2 from the urine.

3. Scherer ascribed the circumstance to the conversion of the neutral phosphates of calcium and magnesium into basic salts.

In a recent number of the *Zeitschrift für physiologische Chemie*, 1883, VII. Bd., p. 119, among some "Kleinere Mittheilungen" by Professor E. Salkowski of Berlin, is a short article—"Ueber die Löslichkeitsverhältnisse des phosphorsauren Kalkes im Harn"—which attracted my attention. Before making any comments it will be convenient to reproduce Salkowski's observations, so far as necessary, in his own words.

In the first place, Salkowski points out a fact which appears to have been hitherto unaccountably overlooked—viz., that urines troubled by heating *frequently become perfectly clear again upon cooling*. This phenomenon—turbidity upon heating and re-solution upon cooling—is exhibited by the 24-hours urine, in the majority of cases, or at least very frequently. When the calcium phosphate is precipitated in a flocculent form—*i.e.*, corresponding to a relatively large separation, the precipitate may not clear up upon cooling.

This precipitation of calcium phosphate is usually attributed to the evolution of the free CO_2 held in solution in the urine. It is undoubtedly true that CO_2 can dissolve calcium phosphate, but whether the urinary CO_2 can play this part is very doubtful, for the amount of this gas in urine (4·4 to 14·3 per cent.) is too small to exercise this solvent action upon calcium phosphate. Again, it is by no means the rule that urine which yields a phosphatic deposit by heat becomes alkaline, or even shows any tendency to alkalescence, in its reaction. This may happen, no doubt, but it is not a condition of the precipitation—on the contrary, no alteration in the reaction is commonly noticed; so that in the majority of cases we cannot admit as causes either the extrication of CO_2 or a partial transformation of urea into ammonium carbonate.

From 100 cc. of acid urine, sp. gr. 1029, heated to boiling, Salkowski obtained a permanent precipitate which weighed 0·0836 grm. The precipitate was free from Mg, and contained an amount of CaO nearly corresponding to the formula $Ca_3P_2O_8$.

The reaction of this urine after the separation of the calcium phosphate underwent no sensible change. The following experiments are adduced by Salkowski in elucidation of the facts described above:—

If a few drops of solution of calcium chloride are added to a solution of primary potassium phosphate (KH_2PO_4), whose strength approximates to the amount in normal urine (*i.e.*, about 0·2 P_2O_5 in 100 cc.), the fluid remains clear. If the liquid be now boiled, calcium phosphate separates out, the reaction remaining acid. But the separation is not complete, for the filtrate from the flocculent gelatinous precipitate still includes phosphoric acid and calcium, and accordingly when warmed with ammonia yields an additional precipitate of calcium phosphate; and lastly, the filtrate from this precipitate still contains alkaline phosphate together with small quantities of chloride of potassium. Thus we can accurately imitate the relations of the urine in a fluid *which contains nothing else than phosphoric acid, potassium, calcium, and a small quantity of chlorine.* Solutions of ordinary sodium phosphate (Na_2HPO_4) also furnish the same results when treated with calcium chloride, shaken, and filtered. The filtrate reacts neutral, contains calcium phosphate, although in small amount in solution, and behaves upon heating as described. Freshly precipitated and well-washed calcium phosphate likewise dissolves by agitation in solution of alkaline phosphate—*i.e.*, in (K,Na) H_2PO_4—but only to a slight extent. In these cases and also in urine Salkowski thinks that we evidently have to do with an easily decomposed combination of calcium phosphate and alkaline phosphate. No alteration in the reaction was observed to follow the separation of the calcium phosphate; and, upon theoretical grounds, we would rather expect an *increase* of acidity, since the soluble combinations of phosphoric acid, in which H_2 are replaced by a metal, have an alkaline reaction, but the calcium phosphate, as separated from the urine, contains three atoms of metal, and therefore in the act of precipitation an equivalent of base is withdrawn from the fluid.

Transient cloudiness, which certainly corresponds to a scanty separation, may, perhaps, be regarded as a dissociation phenomenon resulting from elevation of temperature. Whether a urine does

or does not deposit calcium phosphate upon heating depends upon two things:—(*a*) upon the reaction; (*b*) upon the proportion of Ca present.

If 100 cc. of a urine which remains clear upon boiling are cautiously treated with dilute solution of calcium chloride, added drop by drop, so as not to cause a precipitate, and the heat test is applied from time to time, we soon arrive at a point when the urine is troubled by heating and clears again upon cooling. Let this point be overstepped, by adding more calcium chloride, and the flocculent precipitate obtained by heat will no longer redissolve upon cooling.

Similar results are obtained by simply neutralising the acid reaction of the urine with one-fourth normal soda solution. But naturally in this case the transient as well as the persistent turbidity is much less, because healthy urine contains very little calcium (0·2–0·4 grm. CaO *per diem.*)

I will now make a few remarks on Salkowski's paper—(*a*) as to the re-solution of the precipitate; (*b*) as to the reaction of the liquid; (*c*) as to the theory of production of the precipitate.

(*a*) In the urines which I have as yet examined I have scarcely succeeded in *entirely* re-dissolving the precipitate by cooling the urine.

(*b*) So far as my observations go, they confirm Salkowski's statement that in urines which become turbid by heat, no decided change in the reaction to test-papers occurs after boiling. In one case I thought the acid reaction was better marked after boiling. I have not met with a urine rendered alkaline by boiling.

(*c*) As to the nature of the precipitate, Salkowski seems to conclude that it corresponds to $Ca_3(PO_4)_2$, and gives one approximate analysis in support of this, but he does not attempt any precise explanation of the facts.

From some experiments made in conjunction with Dr. Emerson Reynolds, to whom I am much indebted, it appears probable that the production of the precipitate depends upon a nice adjustment in the proportions and basicity of the phosphatic salts existing in the urine.

Some pure neutral calcium chloride was prepared, and likewise some pure crystallised acid potassium phosphate (KH_2PO_4). With these two salts alone we failed to imitate the behaviour of the urine, and I am unable to confirm Salkowski's experiment; but on adding a little Na_2HPO_4 to the KH_2PO_4—*i.e.*, reducing the

acidity—and then a little calcium chloride, a white, gelatinous, flocculent precipitate was obtained upon boiling, which partially cleared by cooling, the reaction remaining acid.

A similar precipitation and re-solution could be obtained by cautiously treating Na_2HPO_4 with a little phosphoric acid, and then adding calcium chloride. In this way we obtain a mixture of mono- and di-metallic phosphates, and it seems reasonable to conclude that Salkowski may not have operated with a pure salt. It was also found that an excess of acid phosphate re-dissolved completely the precipitate from urine, or the previous addition of a large excess of acid phosphate to the urine prevented precipitation by heat.

Dr. Reynolds was kind enough to prepare for me a solution which exhibits the property in question. Ammonia was very cautiously added to a dilute solution of acid calcium phosphate ($CaH_4P_2O_8$) until a permanent precipitate was just formed; then a few drops more of the acid phosphate were added, and the liquid filtered. Upon boiling the liquid became turbid, and *partially* cleared again upon cooling.

It is known that the acid salt, $Ca_2H_2P_2O_8$ (prepared by action of Na_2HPO_4 on $CaCl_2$), combines with different proportions of water, that it may be crystalline or amorphous and *more or less soluble in acid*, according to the manner of its precipitation, and that it also often contains admixed tribasic phosphate (Ca_32PO_4).—(" Watts' Dict. of Chem.," IV., p. 555.)

Either of its hydrates [($Ca_2H_2P_2O_8$, $4H_2O$) or ($Ca_2H_2P_2O_8$, $3H_2O$)] is decomposed by boiling in water. $Ca_2H_2P_2O_8$, $3H_2O$ is nearly insoluble in cold water, but its solution is assisted by the presence of NaCl, ammonium salts, organic acids, and CO_2 (conditions some of which exist in urine), and it is resolved by boiling with water into insoluble Ca_32PO_4, and soluble $CaH_4P_2O_8$. Thus $2\,(Ca_2H_2P_2O_8) = Ca_3P_2O_8 + CaH_4P_2O_8$. Now, we do not know exactly in what state or states calcium phosphates occur in urine, but let us assume that we have in solution at the same time di-calcic and mono-calcic phosphate; then, under suitable conditions of relative proportion and of acidity, we might, as Dr. Reynolds suggests, express the change by heat in this way:—

$$2\,(Ca_2H_2P_2O_8) + CaH_4P_2O_8 = Ca_3P_2O_8 \text{ (insoluble)} + 2CaH_4P_2O_8 \text{ (soluble)}.$$

Upon reduction of the temperature the inverse change would occur, attended with re-solution of the tricalcic phosphate in part

or in full, according to the relative amount of acid phosphates present. So that, in a word, the phenomenon in question seems to be one of unstable equilibrium among certain phosphatic salts,* the balance of solubility being easily disturbed by changes of temperature, modified possibly by the kind and amount of other salts in the solution. These considerations tend to throw some light upon the deposition of calcium phosphate within the bladder, and on the formation of urinary calculi, and show how such precipitation may take place in a feebly acid condition of the urine.

SUBCUTANEOUS NERVE-STRETCHING.

From a lecture by Dr. Dujardin-Beaumetz, published in the *Philadelphia Medical News*, April 14, we learn that in the treatment of sciatica Billroth has of late advised to practice what he designates subcutaneous elongation of the sciatic nerve. Struck with the distribution of nerves and blood-vessels in the inferior member, which pass, the former to the posterior part of the thigh, and the latter to the anterior portion, Billroth thought that by flexion of the thigh on the pelvis he might, without injuring the vessels, make energetic traction on the sciatic nerve. This is his manner of proceeding:—The patient being completely relaxed from chloroform, the thigh is flexed on the abdomen, and the leg is forcibly *extended* on the thigh till the toes almost touch the head of the patient. This second part of the operation demands great care in its performance. The biceps, semi-tendinosus, and semi-membranosus muscles powerfully resist this movement, and too much violence would result in rupture of these muscles or their tendons, or even dislocation of the head of the femur. After this flexion and extension, the limb is placed in its natural position. Dr. Dujardin-Beaumetz has in this year performed this subcutaneous elongation in three cases. In one the patient was unable to walk, from an obstinate sciatica, which had lasted three months; here, subcutaneous nerve-stretching brought immediate, permanent cure. In the other two the benefit was temporary. He believes that in sciaticas rebellious to all therapeutic measures we are warranted in attempting subcutaneous nerve-stretching, which is doubtless a safer operation than that of cutting down on the nerve, as is usually done, at the junction of the lower and middle third of the thigh, lifting out the nerve with the forefinger, and pulling on it with a force of forty or fifty pounds. A similar procedure, we learn from the same journal, has been adopted in a number of cases of ataxy by M. Lepine, and with advantage.—*Le Progrès Méd.*, March 24, 1883.

* From two-thirds to three-fourths of the PO_4 in urine are combined with K or Na; the rest with Ca and Mg.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Elementary Meteorology. By ROBERT H. SCOTT, M.A., F.R.S.; Secretary to the Meteorological Council, and Author of "Weather Charts and Storm Warnings." The International Scientific Series. Vol. XLVI. London: Kegan Paul, Trench, & Co. 1883. 8vo. Pp. 408.

THIS work will be hailed with satisfaction by the many members of the medical profession who have for several years back been without a text-book on a subject which comes home to every one, but particularly to those who have to combat disease and are concerned with State Medicine or the Science of Public Health.

It is true that some recent works on Hygiene contain chapters on Meteorological Observations and Climatology; but, since Mr. Alexander Buchan's "Introductory Text-book of Meteorology" and his "Handy-book of Meteorology" have gone out of print, no systematic treatise on the subject has been in the market.

The publishers of the present volume are to be congratulated on having secured the services of so competent an author as Mr. Scott, whose position for many years as Director of the Meteorological Office, London, and Secretary of the Meteorological Council of the Royal Society, has enabled him to write as a thorough master of his subject. The misfortune by fire which Messrs. Kegan Paul, Trench, & Co., met with in April last would have been all the more deplorable had Mr. Scott's work perished in the flames. When the fire occurred, however, the first edition had been already well-nigh exhausted, so that scarcely any loss was suffered.

In a preface as modest as it is brief the author expresses his acknowledgments to Dr. Julius Hann, of Vienna, whose recently-published "Erdkunde" has been freely used in the preparation of Part II., on the distribution of temperature, atmospherical pressure, ocean currents, and rain, &c.; to Professor Mohn, of Christiana, the author of "Grundzüge der Meteorologie;" and to Mr.

Buchan, whose "Handy-book of Meteorology" has also been frequently laid under contribution.

The plan of the work is as follows:—In Part I., after a preliminary notice of the earth and its atmosphere, the various instruments employed in weather observations and the modes of using them are described. In Part II. an account is given of the geographical distribution of the different phenomena, which the author hopes "will serve as a general introduction to the science of physical geography as explained in other text-books."

In an otherwise excellent chapter on the "Earth and the Atmosphere," Mr. Scott endorses a statement of Dr. Angus Smith which is not quite accurate. It is—"We all avoid an atmosphere containing 0·1 of carbonic acid in crowded rooms; and the experience of civilised men is that it is *not only odious* but unwholesome. When people speak of good ventilation in dwelling-houses they mean, without knowing it, air with less than 0·07 of carbonic acid."[a] Now, the mere presence of 0·1 of carbon dioxide will not make an atmosphere "odious." This quality depends on the fœtid and decomposing organic matter which is present, as well as the carbon dioxide, in the air of a crowded room.

As an example of the simplicity and clearness with which Mr. Scott expresses himself, we may quote his definitions of the "freezing-point" and "boiling-point" in the chapter on "Temperature." "The freezing-point," he says, "is *the temperature of pure water with ice melting in it, or of melting snow.* It is necessary to state this, because the temperature at which water freezes is not constant, and under certain circumstances water may be cooled several degrees below the freezing-point without the formation of ice." Again—"The temperature at which water boils depends on the pressure of the atmosphere at the time, as *the less is that pressure the easier is it for the vapour to liberate itself from the liquid, and accordingly the lower is the temperature at which ebullition occurs*" (page 21). At the end of this same chapter, the entire march of temperature during the year is graphically represented in an ingenious diagram, the principle of which was devised by M. Léon Lalanne, and which has received the name "chronoisothermal" (time—equal—warmth).

Chapter IV. is on "Radiation." The way in which nocturnal radiation can be practically utilised in the preparation of ice, even in tropical climates, is illustrated in a remarkable and striking

[a] Air and Rain. Longmans. 1872. P. 56.

manner. It seems that in the neighbourhood of Calcutta about 10 tons of ice can be produced in a single night when the temperature of the air is 15° or 20° *above* the freezing point. Mr. T. A. Wise gave an account of the practice followed, in a paper in *Nature*, Vol. V., p. 189 :—

"A rectangular piece of ground is marked out, lying east and west, and measuring 120 by 20 feet. This is excavated to the depth of two feet, and filled with rice straw, rather loosely laid, to within 6 inches of the surface of the ground. The ice is formed in shallow dishes of porous earthenware, and the amount of water placed in each is regulated by the amount of ice expected.

"In the cold weather, when the temperature of the air at the ice-fields is under 50°, ice is formed in the dishes. The freezing is most active with N.N.W. airs, as these are the driest; it ceases entirely with southerly or easterly airs, even though their temperature may be lower than that of the N.N.W. wind.

"No ice is formed if the wind is sufficiently strong to be called a breeze, for the air is not left long enough in contact with the bed for its temperature to fall sufficiently."

The explanation of this phenomenon of radiation is given in Mr. Scott's happiest style. He says :—

"The rice straw, being kept loose and perfectly dry, cuts off the access of heat from the surface of the ground below it, and, when the sun goes down, the straw being a powerful radiator, the temperature of the air in contact with the dishes is reduced some 20° below that prevailing two or three feet above them. The rapid evaporation of the water into the dry air above creates also an active demand for heat to be rendered latent in the formation of steam, and the result of all these agencies is the formation of ice, under favourable circumstances, on the extensive scale above mentioned" (page 61, *et seq.*).

The next subject dealt with is "Pressure," in Chapter V., which includes a very complete history of the barometer, and gives details as to the construction and means of using the most approved modern instruments. The construction of the aneroid barometer is also described.

In Chapters VI., VII., and VIII., the subject of the "Moisture of the Atmosphere" is discussed under three headings, namely :—

1. *Atmometry*—or, more correctly, *atmidometry* (from ἀτμίς = "vapour"), or the determination of the amount of water passing into the air by evaporation.

2. *Hygrometry*, or the determination of the amount of water present in the air in a vaporous form.

3. *Hyetometry*, or the determination of the amount of water condensed out of the atmosphere in the form of rain, hail, or snow (ὑετός = "rain").

Mr. Scott gives an account of a wonderful example of the phenomenon of "silver thaw" or "glazed frost" (Fr. *verglas*, Germ. *Glatteis*). He writes:—

"One of the most striking instances of glazed frost, and of the damage which it can occasion, occurred in France, January 22–4, 1879, in the department of Loiret, and also in the neighbourhood of Paris, and was described by M. Godefroy in the 'Comptes Rendus'[a] of the French Academy for the time. He says that 'rain fell continuously for the three days, although the air temperature ranged from 24° to 28°. When the rain was scanty, each drop at once solidified even on warm objects, and took the form of small, flattened, irregular pastilles. The phenomenon was especially remarkable when the rain fell on woollen stuffs. The drops had evidently been brought to a state of superfusion in their passage through cold air—that is, they had been cooled below the freezing-point without congealing, so that they at once solidified on contact with solid bodies. When the rain was plentiful, on the other hand, part of it was at once changed to ice, but part remained for a time in the liquid state, flowing along solid bodies, forming new layers of ice, and producing stalactites. The ice-covered branches of trees broke more and more under the weight, and on the evening of the second day the phenomenon assumed frightful proportions. In the morning the ground was strewn with branches, whole trees lay uprooted, and others were entirely split from top to base. Most of them were entirely cleared of branches, and in some parts the forest looked like one of masts. The following statements will explain the destructive action. A twig of a lime tree 4 inches long weighed, when covered with ice, 930 grains; the same twig, when freed from ice, weighed 7·5 grains. A leaf of laurel carried a coating of ice weighing 1,120 grains. All objects exposed were alike covered with ice. An evergreen shrub, like a rhododendron or a privet, became a block of ice, through which the leaves and branches could be distinguished fairly well. Fir trees had the appearance of huge pyramids of ice, each group of branches being weighed down on the one below, and the lowest on the ground'" (page 116, *et seq.*).

Some of our readers may remember that on the 14th of December last an example of "silver thaw" occurred in Dublin, when the intense frost of that month broke up suddenly—the thermo-

[a] Comptes Rendus. Vol. LXXXIX., page 999.

meter rising from 13·3° at 9 p.m. of the 14th to 34·0° at 9 a.m. of the 15th.

The section on "Clouds" in Chapter VII. is somewhat superficial, and we could have wished that the author had developed his account of the various cloud-forms after the fashion of the Rev. Clement Ley, M.A., who has made this subject so attractive by his graphic description. In Mr. Scott's account of "Cumulus," or the "wool-pack" cloud, we fail to find an allusion to the frequent occurrence of what have been called "cloud-slopes" in connexion with this type of cloud. If an observer stands with his back to the wind when cumuli are visible, he will observe that in front of him the mass of cloud usually tapers away towards the left hand, while towards the right hand it rises into a rounded or conical summit, often of majestic proportions. Viewed laterally also the base of such a cloud is found not to be strictly horizontal, but to slope upwards from behind forwards. These appearances are doubtless due to perspective, and are caused by the fact that usually the higher or loftier portions of the cloud are travelling more rapidly and in a slightly centrifugal direction as compared with its lower strata.

Much as we would have liked to dwell on the chapters relating to the wind and to electrical and optical phenomena, we are compelled to pass on. Speaking of the distribution of temperature on the earth's surface, Mr. Scott adduces some striking examples of the extremes which have been recorded. He says:—

"The highest monthly average known is that of May for Massowah (in Abyssinia), which amounts to 99°, and the difference between this and the lowest for January, —56° at Werchojansk (in Siberia), is 155°. The contrast between individual temperatures actually observed is, however, far greater than this. . . . . As to instrumental observations of air-temperature, 130° has been recorded at Murzuk, in Fezzan; and at Cooper's Creek, in Australia, where Burke and Wills died, a thermometer graduated up to 127°, and, left for safety in the fork of a tree, was found to have been burst by the expansion of the mercury. On the other hand, Gorochow recorded —81° December 30, 1871, at Werchojansk, and Kane noticed —69° at Rensselaer Harbour (on Smith's Sound).

"Accordingly we see that the human system can bear a difference in the air-temperature of over 210°, or of thirty degrees more than the interval between melting ice and boiling water. As regards the relative endurability of these extremes, Dr. Moss, in his 'Shores of the Polar Sea,' has some remarks to the point. He says:—'Many a time the relative merits of Arctic cold and Tropical heat were warmly canvassed.

Many of our officers and men had lately returned from the Ashantee campaign, and they could speak with authority. There was one thing clear—one could sometimes get warm in the Arctic, but never get cool on the Coast.'"

It may be incidentally mentioned that this chapter and the one which follows it—on the "Distribution of Atmospheric Pressure"—are illustrated by a series of coloured diagrams at the end of the book.

Chapter XIV., on "The Prevailing Winds," is full of interesting matter, as is also Chapter XV., on "Ocean Currents and Sea Temperature." The author properly points out that currents are named according to the direction *towards which they flow*, while winds are named according to the direction *from which they come.* He also exposes the old misconception that a temperature of 39·5° (that of the maximal density of *fresh* water) prevailed at the sea-bottom all over the globe wherever the water was not very shallow—this dense stratum being overlaid by warmer water in low, and by colder in high, latitudes. The voyages of the "Porcupine" and "Challenger," undertaken by the Admiralty at the suggestion of the Royal Society, set this question at rest, and showed that at great depths in the sea, in all latitudes where soundings were made, a temperature of about 32° prevailed.

Neither in this chapter, nor in that on "Storms," does Mr. Scott allude to the height of waves in mid-ocean—a subject which was lately brought under our notice by Commander William Kiddle, R.N. Speaking of the deep depression of the barometer during winter in the basin of the North Atlantic, between the British Islands and Iceland—an area which the French not inaptly term "Le Trou de Diable"—Commander Kiddle says that in no other part of the globe are the shifts of wind more dangerous, and in wave height it is unequalled. In an exceptional storm in this region Commander Kiddle estimated the maximal length of the waves at 1,180 feet, and their height from crest to hollow at 70 feet. He alludes to another interesting fact in connexion with Atlantic storms—they commence, say at S.S.W., and attain a force of a strong to a whole gale; but, notwithstanding, a well-found proper ship "goes along comfortably;" the waves do not reach a dangerous height, nor are they "vicious." In due course the wind veers suddenly to N.W., and in a few moments the scene is changed—the surface of the water is torn up just as if a rake or a harrow had been passed over it, the waves quickly assume enormous proportions,

and too often a disaster follows. Commander Kiddle, with some misgiving, suggests, in explanation of this phenomenon, that "the warm air of the south has not the lifting power on water which the biting polar wind unquestionably possesses." But we venture to think that the true reasons are—(1) the sudden shift of wind from S.S.W. to N.W. causes the new-formed waves to dash against the swell still coming up from the southward, (2) the new direction of the wind is at right angles, or more nearly opposite to the current in the ocean, while the former direction coincides with that current, and (3) the warm southerly or equatorial wind, being an *ascensional* current, exercises comparatively little friction on the surface of the water, while the cold northerly, or polar, wind, *descending* from above upon the surface of the water, lashes it into fury.

The remaining topics discussed by Mr. Scott are the distribution of rain, climate, weather, and storms. We are sorry that the chapter on "Climate" is so short—extending over only nine pages—as to fail altogether to do justice to this most important subject; nor will it satisfy the inquiring medical reader to be told that "as regards the question of climate in its relation to health and disease, he *will find full information in numerous works* of deservedly high reputation on medical climatology"! The concluding chapters on "Weather" and "Storms" are very good, and amongst the Appendices is an admirable note on the relation between Sunspots and Weather. The value of the book is further enhanced by the coloured diagrams to which reference has already been made, and by a very full Index, on the compilation of which evidently no little labour has been spent.

A Practical Treatise on Diseases of the Skin. By LOUIS A. DUHRING, M.D. Third Edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co. 1882. 8vo. Pp. 685.

ON more than one occasion already we have written in terms of approbation of this work, which has now an established reputation as a text-book on the important subject of Skin Diseases both in America and in Europe.

The third edition is deserving of all praise. We would draw particular attention to the opening chapters on the Anatomy and Physiology of the Skin, the symptomatology, ætiology, pathology, treatment, diagnosis and prognosis of cutaneous diseases and their

classification. These chapters constitute the first part of the work. Part II., extending to 550 pages, is devoted to a detailed consideration of the special affections to which the skin is liable.

The excellence and finish of the few illustrations, which have been reproduced by the Photo-Engraving Company of New York, make us regret that the author did not more largely avail himself of artistic skill, although nothing can exceed the clearness of his language and the happiness of his descriptions. Indeed, without any intention of wounding the *amour propre* of our Transatlantic brethren, we may congratulate Dr. Duhring on the purity of his English composition and its freedom from so-called "Americanisms."

The paper, letterpress, and binding, are worthy of the firm of Lippincott & Co., the well-known publishers of Philadelphia, and Covent Garden, London.

RECENT WORKS ON ANATOMY.

1. *Quain's Elements of Anatomy.* The Ninth Edition, re-edited by ALLEN THOMSON, M.D., D.C.L., LL.D., F.R.S., formerly Professor of Anatomy in the University of Glasgow; EDWARD ALBERT SCHÄFER, F.R.S., Assistant Professor of Physiology in University College, London; and GEORGE DANCER THANE, Professor of Anatomy in the University College, London. Two Volumes. London: Longmans, Green & Co. 1882. Pp. 1,720; with 1,195 Engravings on Wood, of which 97 are coloured.
2. *Anatomy, Descriptive and Surgical.* By HENRY GRAY, F.R.S., F.R.C.S., formerly Lecturer on Anatomy at St. George's Hospital. Tenth Edition, re-edited by T. PICKERING PICK, Surgeon to St. George's Hospital; Examiner in Anatomy, Royal College of Surgeons, England. London: Longmans, Green, & Co. 1883. Royal 8vo. Pp. 824.

1. THE ninth edition of "Quain's Elements of Anatomy," to the appearance of which we had been looking forward for some time, has reached us in the shape of two goodly volumes, much larger than those of the previous issue. The preparation of such a work, the representative text-book of English attainments in anatomical science, imposes a very serious responsibility on the editors, by the thorough accomplishment of whose task the scientific education of each rising generation of medical students in these countries is known to be so largely influenced. We are glad to be able to say

that the gentlemen to whose hands the present issue has been entrusted seem to have been fully conscious of the importance of their task.

In this edition the whole work has been subjected to a thorough revision, and such additions and improvements have been introduced as seemed necessary, without materially altering its form. In the first volume the figures of the blood vessels have been coloured, and a chapter has been added on superficial and topographical anatomy. In the second volume, very considerable changes have been made in the departments of histology and embryology, and in the description of the central nervous system. In connexion with his part of the work, Mr. Schäfer acknowledges, in the Preface, the assistance he has received from the systematic works of Henle, Luschka, W. Krause, and Schwalbe, and from Klein's "Atlas of Histology," and Ranvier's "Traité Technique d'Histologie." Dr. Thomson also acknowledges his obligations to the new edition of Kölliker's "Entwickelungsgeschichte," to His's "Anatomie Menschlicher Embryonen," and to the "Comparative Embryology" of the lamented F. M. Balfour. A considerable number of new figures have been introduced into the present edition, some having been substituted for former ones now withdrawn, and others added as new illustrations.

As in the last edition of this work, the first volume comprises the whole of the descriptive anatomy, while the histological portions, with the relations and structure of the viscera, development of the tissues, &c., are placed in the second volume, which ends with the section on Embryology.

An examination of the Introduction leads the reader to expect that general morphological relations will receive more attention in this work than in any of the previous editions, and most readers will probably be satisfied with the result.

The osteological department still remains the most poorly furnished, and a considerable amount of matter should be added to bring it at all near the level of the rest of the work. We are surprised that this section should be allowed to appear in its present condition, seeing that additions so extensive have been made in all other parts.

The description of the vertebral column, both as a whole and in the various groups of its constituent segments, is fairly complete, and the homologies of the various processes of the axial skeleton are clearly indicated.

The transcendental anatomy of the skull is dealt with at sufficient length, and well-arranged tables are furnished to the student of the typical constituent segments of the brain-case, and of the principal cavities connected therewith. The Gœthe-Oken hypothesis of the vertebrate theory of the skull is favourably entertained; and the writer, without committing himself to a strongly pronounced opinion on the developmental origin of the cranial skeleton, inclines to the view "that at least the posterior portion of the skull, the part behind the region of the pituitary fossa, has in some degree a vertebrate nature — *i.e.*, that it has had its origin in the coalescence, modification, and partial suppression of a series of segments, the number of which is inferred, from the disposition of the visceral arches and of the cranial nerves, to have been considerable, but cannot in the present state of our knowledge" be precisely determined. Of the soundness of the evidence in favour of the vertebrate origin of this region of the skull, we do not think that any doubt can be entertained, and the results arrived at by Professor Hannover, in his elaborate investigation of the subject, leave little to be desired in the settlement of the much-disputed origin of the basicranial axis.

The description of the individual skull bones is fairly complete without involving minuteness of detail. The ossification we would prefer to have dealt with under the heading of each separate bone, but we know that there are a great many things to be said in favour of the arrangement adopted in the text. We presume that this part of the work had gone through the press before the appearance of Professor Hannover's *brochure* on the "primordial cartilage," which has added so much to our previous knowledge of the growth and ossification of the cranial bones. The sphenoid bone is, in proportion, less completely dealt with than most of the others; but it is one which presents an almost inexhaustible field for investigation, and the editor probably thought it more judicious not to try to include even an abstract of the very extended literature of this complicated segment of the human skeleton—its number of described processes now amounting to about fifty-six, and its ossific centra to twenty-six. These are sufficient objections to any endeavour to include in a work on systematic anatomy all that has been written on the subject.

A section on craniometry is included, which gives the chief race-varieties, adopting the technical (anthropological) nomenclature of Broca and his successors in this field of inquiry. Of the various

modifications of Camper's facial angle, that which Professor Thane most favours is the *ophryo-alveolo-auricular*, while he regards the *gnathic index* of Flower as a still more convenient and accurate criterion. Under the head of "varieties" of the humerus are included the supracondylar process and the supratrochlear foramen. The inferiority of race, which the occurrence of the latter seems to indicate, might have been alluded to, which, with the *femur à colonne* and *platycnemic tibia*, and some others less pronounced of the primitive skeletal characteristics, were well exemplified in the collection exhumed a few years ago at Donnybrook, and exhibited by Dr. W. Frazer to the Surgical Society.

In dealing with the ossification of the scapula, "two, sometimes three," ossific nuclei are given to the acromion process. Uffelmann, who is probably the best authority on the development of this bone, gives three as the normal number, a conclusion which our own more limited investigations entirely corroborates. The same observer also pointed out the existence of a separate centre of ossification for the tubercle of Retzius, which, however, he has rather overweighted by the application of the ponderous name of *osteo-epiphysis quadrangularis*. In the description of the clavicle, the dermal connexions of the bone in the early period of its history might have been dwelt on at some length with advantage to the student.

In his account of the innominate bone, Professor Thane agrees that the thyroid foramen is nearly oval in the male, while in the other sex it approaches the triangular form. The opposite view has also been maintained, and the existence of such contradictory opinions upheld, as they were, by observers of so much experience, is sufficient proof of the non-reliability of the test, as a characteristic of sex.

The homologies of the appendicular skeleton are dealt with at sufficient length in a small-type section. We may mention, in connexion with this subject, that we heartily wish we could see the typical nomenclature adopted by Gegenbaur for the bones of the carpus and tarsus come into general use among anatomists. The classification of joints given at the commencement of the chapter on Syndesmology might easily be improved; and, in the description of most of the individual articulations, the reader is not told to which class the joint is referred—an omission which must be strongly felt by the junior student.

Among the proper ligaments of the scapula, the *spino-glenoid* of Sir A. Cooper (*ligamentum transversum proprius scapulæ inferius*

of Henle) is not mentioned. In the description of the shoulder-joint the *gleno-humeral* ligament is included. As this structure was first specially described by a Dublin anatomist (Valentine Flood) we are sorry that his name does not appear. The accessory capsular bundles described by Prof. Humphry—*superior* (*coraco-brachial*), *inferior*, and *internal*—also remain unnoticed.

In the description of the movements of the hip-joint, the inter-articular ligament (*teres*) is, we are told, put upon the stretch when "the hip is partly flexed, and the thigh then adducted, or rotated out." This is true, but the result of our own observations would lead us to say that the most complete tension of this structure is obtained when the hip is rotated *inwards* after flexion. In examining this ligament we have adopted Humphry's method of trephining through the bottom of the acetabulum, and also tried the plan of chiselling away the bottom of this cavity, which has some advantages; but for this we gave ourselves no particular credit till we had recently an opportunity of hearing it publicly claimed as an original plan, long after we had been using it.

The description of the muscles leaves, upon the whole, but little to be found fault with. The principal varieties which have been recorded are given in connexion with each muscle, but the list and the notice of each anomaly included is necessarily imperfect.

We are glad to see that the editor attributes no distinct bony attachment to the frontal portion of the occipito-frontalis muscle, which, in the vast majority of cases, entirely accords with our own experience. We cannot help noticing here what a difficulty anatomists seem to find in furnishing a description of the arrangement of the fibres of the pectoralis major as they pass towards the tendon of insertion, and of their union with the latter structure. Every writer on the subject appears to think himself in duty bound to treat these points at some considerable length. We do not recollect any English authority who has succeeded in doing them justice.

The vascular system is well treated, although the arterial relations might, in most cases, be more fully particularised. The illustrations in this edition are improved by colouring. We should be glad, however, to see some other illustrations substituted for the hackneyed ones of Tiedemann, in most of which the arteries are delineated to the absolute exclusion of their venous and nervous relations—the removal of these latter being so complete that the student may well be puzzled to comprehend for what

purpose so much pains had been taken to abolish all traces of these—the most important of the relations of each vessel.

The description of the venous system presents a decided improvement in this edition, although a good deal still remains to be done for this much-neglected department of human anatomy. The azygos veins are carefully described in the manner indicated by Morrison. Most of the more important veins are more fully described than we have found them in any other of our English text-books. In connexion with the vertebral vein is described the "deep-cervical vein (posterior vertebral)," better known to Dublin anatomists as the *posterior jugular* of Cruveilhier, whose description is much more precise than that offered to us in the present work.

We are glad to see that, in dealing with the nervous system, Professor Thane has had the moral courage to reject the classification of Willis, in favour of which some absurd prejudice appeared to cling to the writers of our anatomical text-books in these countries. The more convenient and more natural arrangement proposed by Sömmerring has long been used by Continental anatomists, and we regard its adoption in the leading English text-book as a favourable omen.

Glancing over the well-written description of the cranial nerves, we were glad to find that the editor has correctly traced the lesser superficial petrosal nerve, and has not, like the author of one of our standard text-books, traced it out of the skull through the foramen ovale. The name of *canaliculus innominatus* is not, however, given. The ganglion of Bochdalek is not noticed, nor are the smaller and less-known ganglia connected with the fifth and other nerves. The editor also seems, perhaps judiciously, to be disposed to omit the describer's name, which is usually connected with each ganglion—*e.g.*, in case of both those of the glosso-pharyngeal; we were sorry, however, to find the mythical ganglion of Ribes still retained without question, and the quotation of its description seriously given.

The chapter on topographical and surgical anatomy ending with that of the male perinæum closes the first part of the work, and this section has also been satisfactorily executed. The editor evidently does not care for authorities; for example, in connexion with the anatomy of femoral hernia, no mention is made of the names of Hey, Burns, or Colles. In the case of the second of these, at least, the omission is a decided gain, as his description of the ligamentous structure discovered by him is anything but clear,

and perhaps justifies us in saying little with confidence about it, except that it certainly is NOT the structure so generally known to Dublin anatomists by his name.

The second volume includes the sections devoted to Histology, Splanchnology, and Embryology; and it is here, as might be expected, that the textual changes are most radical and comprehensive. The labours of Professor Schäfer and Allen Thomson have indeed little to be found fault with in their respective accounts of the present state of our ever-shifting knowledge in these departments of biological science. A very large number of illustrations are added wherever their presence could be of use, and give every desirable assistance to the student in the understanding of the text. The history of protoplasm is very fully given, and sufficient prominence is accorded to the views of the leading authorities. The writer gives in detail the description of Heitzmann's intracellular network, without, however, offering a decided opinion on the question of its existence.

A detailed account is given of the important results of the observations of Strassburg, Fleming, &c., on karyokinesis, and its value in the investigation of the phenomena of cell-growth. An unfortunate accident caused the coloured illustrations of the blood-corpuscles and crystals to appear in a wrong tint, a mischief which is, however, as far as possible, neutralised by explanation in the proper place. The addition to the description of the structure and movements of cilia have been more meagre than we had anticipated in approaching this very interesting subject. The histology of the various connective tissues is very satisfactorily dealt with, and the growth and development of bone occupy, as usual, a space much larger than that devoted to the corresponding examination of any other tissue.

In the description of striated muscular tissue, special prominence is, as we should expect, given to its structure in the *Dysticus marginalis*, the fibres of which make so beautiful a histological specimen. The parallel rods present no difficulty in the recognition, and are always as distinct as Professor Schäfer's figure represents them; but we confess we have not as yet been able to demonstrate the "knobs" on the ends so satisfactorily. In dealing with medullated nerve-fibre, the writer gives fully the arguments for and against the existence of Lautermann's notches, without, however, giving any definite opinion of his own. The *neurokeratin* scaffolding described by Kühne and Ewald, and the protoplasmic

sheath and dissepiments of Ranvier (*sheath of Mauthner*), receive a slight notice, but not their distinctive names.

The anatomy of the cerebro-spinal axis, both descriptive and histological, is treated at great length, and will be found to repay the most careful perusal. The *lobulus paracentralis* of Betz is not mentioned, although it deserves special notice, both from its position and the peculiarities of its minute structure. The sections which deal with the structure of the special-sense organs are very full and complete, and so are those on the anatomy of the respiratory, digestive, and genito-urinary systems.

The chapter on Embryology, which has been allotted to Dr. Allen Thomson, forms the concluding part of this massive work. We shall only say of it that it does the fullest justice to its subject, and we hail with gladness the conclusive evidence afforded by a careful examination of its pages that the hand and eye of the veteran anatomist have in no wise lost their cunning; that the keen intellect is still vigorous, whose luminous investigations have so much contributed to lighten the dark places of biological science, and whose researches in this special department must make his name a conspicuous landmark in its history throughout all future time.

2. At this time of day it seems superfluous to attempt to review a text-book so well-known and popular as "Gray's Anatomy." We will, therefore, content ourselves with stating that the present—the tenth—edition has been thoroughly revised, and that the sections on Microscopical Anatomy have been altered or re-written so as to keep pace with modern research in this branch of the Science of Anatomy. The editor expresses his acknowledgments to Mr. Ross, Curator of the Museum of St. George's Hospital and lately Assistant-Demonstrator of Anatomy, who prepared all the dissections from which a series of new illustrations have been drawn; and to Mr. Compton, Demonstrator of Histology at St. George's Hospital, for the new microscopical illustrations in the present edition.

The plan of the work is unaltered. It opens with an introduction on General Anatomy and Development by Mr. T. Holmes, M.A., Cantab., Surgeon to St. George's Hospital. This extends over more than one hundred pages, and is followed by the subjects of Descriptive and Surgical Anatomy. That the book is attractively brought out goes without saying, when the names of the

publishers, Messrs. Longmans, Green, & Co., are mentioned. It is to be regretted that some of the illustrations, at all events those of the arteries and veins, are not coloured, and that others are more diagrammatic than true to nature. As an example of this latter point, the section of the female pelvis, showing the position of the viscera, on page 753, represents the vagina as a widely open canal or tube, which is not, of course, its normal condition. On the other hand, the size and distinctness of the drawings and the profuseness with which they are scattered throughout the volume will be certain to render this edition as popular among students as any of its predecessors.

Die Anämie. Von S. LAACHE. Universitäts Programm für das 2 Semester, 1883. Christiania. 1883. Pp. 276.

THIS work, which was undertaken at the instigation and carried out under the direction of Professor Worm Müller, forms a sequel to his book on transfusion and plethora.

The observations, which were all made on men or women suffering from one kind or another of anæmia, consist in enumerations of the blood corpuscles, determinations of the amount of colouring matter in the blood, and measurements of the corpuscles. Besides these, long series of temperature observations and of urinary analyses are recorded. The book, indeed, contains the record of an immense amount of very laborious work.

The methods employed for counting the corpuscles and estimating their amount of hæmoglobin are those of Malassez. The dilution of the blood was nearly always effected in the "mélangeur Potain," and the corpuscles were counted either in the capillary of Malassez or in the apparatus of Hayem. For the determination of the hæmoglobin the hématochromètre of Malassez was employed.

The author admits that by these methods values of absolute accuracy are not attainable, but he considers that estimations made with the same instrument are comparable with one another, and that if a normal standard be first got, the results obtained in diseased conditions can be referred to this with confidence.

He consequently examined the blood of thirty healthy persons of each sex, and found in men the average number of red corpuscles per cubic millimetre was 4,974,000—the maximum, 5,539,000; the minimum, 4,392,000. In women the mean was 4,430,000; maximum, 5,000,000; minimum, 3,924,800. In men the average quantity of hæmoglobin per cubic millimetre was 0·112 milligram;

maximum, 0·125; minimum, 0·098. In women the numbers were—mean, 0·099; maximum, 0·110; minimum, 0·084. In accordance with the previous observations of Worm Müller, Malassez, Hayem, and others, he found that the quantity of hæmoglobin contained in each corpuscle was very constant, and the same for both sexes. This quantity he calls the *value* of the corpuscle. Taking the average quantity as 1, he found in men variations between 0·89 and 1·10, and in women 0·85 to 1·08. He found no difference in the size of the corpuscles in the two sexes. In both the average diameter was 8·5 micromillimetres; the maximum did not exceed 9, and the minimum did not fall below 6·5.

In examining the blood in disease, account is taken only of the corpuscles; the condition of the plasma receives no consideration, so that the term anæmia is equivalent to oligocythæmia. Anæmia is divided into secondary and primary, and the former division is considered under three heads:—1. Anæmia after hæmorrhage. 2. Anæmia in acute diseases. 3. Anæmia in chronic diseases.

Experiments on animals had tended to show that death invariably followed when the number of blood corpuscles was reduced by hæmorrhage to 50 per cent. of their normal amount; but the author finds that in healthy women the number may fall much lower, even to 30 per cent., and yet complete recovery may take place without the aid of transfusion. In the process of recovery it was found that the number of corpuscles increased more rapidly than the quantity of hæmoglobin, so that for a long time the "value" of the corpuscles was below the normal. The effect of iron given internally was imperceptible. The rapidity of increase of the corpuscles was greatest at first, the daily increase being in one case 70,000 for each cubic millimetre—a number which simply baffles conception. Microcytes, although commonly found in the diluted blood, did not appear to play any very important part in the process of regeneration.

Passing over the section on hæmorrhage occurring in persons not previously healthy, we find, under the heading "Anæmia in so-called Spontaneous Hæmorrhages," observations on purpura hæmorrhagica, scorbutus, hæmophilia, and hæmoglobinuria. In recovery from purpura the number of the corpuscles and the hæmoglobin increase with equal rapidity. In scorbutus and hæmophilia the results, as regards the blood, were negative, and in hæmoglobinuria the observations were made only between the attacks, and were consequently of slight value.

The acute diseases in which the blood was examined were—typhoid fever, 13 cases, and syphilis, 16 cases, the latter in the stage of secondary eruption. In typhoid it was found, in opposition to Leichtenstern, that the greatest anæmia was not after defervescence, but, with one exception, during the later part of the febrile period. The average diminution of the number of corpuscles was, in men, 18 per cent.; of hæmoglobin, 31 per cent. In women the numbers were 17 per cent. and 23 per cent. Hence it appears that not only are the corpuscles diminished in number, but that those which remain are poorer in hæmoglobin than they should be. The recovery takes place pretty rapidly, but the corpuscles remain for a time poor in colouring matter.

In syphilis the anæmia was slight, and followed pretty accurately the course of the cutaneous eruption.

In the chapter on Anæmia in Chronic Diseases we find that while, taking an average of 9 cases of Bright's disease, the corpuscles were diminished 19 per cent., and the hæmoglobin 26 per cent., neither cancer nor phthisis *per se* has much influence on the blood so long as they do not interfere with the digestion of food, and are not accompanied by hæmorrhage or other wasting discharge.

In the second and larger part of the book the forms of primary anæmia are considered under the headings Chlorosis, Simple Anæmia, and Pernicious Anæmia, with an appendix which deals with Leukæmia and Pseudo-leukæmia or Hodgkin's disease.

As a result of an examination of 24 cases of chlorosis, the author comes to the following conclusions:—

1. There are two forms of chlorosis, of which only one is characterised by an undoubted diminution in the coloured elements of the blood. 2. This diminution affects both the number of the corpuscles and the hæmoglobin, the latter usually more than the former, so that the "value" of the remaining corpuscles is less than normal. This, however, is not pathognomonic of chlorosis, since it is not constant in this disease, and occurs in other conditions. In true chlorosis the administration of iron causes an increase in the number of the corpuscles, and in still greater degree in the colouring matter, so that the corpuscles come to regain their normal value.

By simple anæmia the author understands "a primary anæmia which stands midway between chlorosis and pernicious anæmia, but is more closely related to the former than to the latter. It is distinguished from chlorosis by its occurrence in both sexes, and at

every period of life; from pernicious anæmia, on the other hand, by the relatively favourable prognosis." It is generally attributed to some enfeebling condition which, however, seems too slight to be the sole cause. The anæmia, which is moderate, is often accompanied by emaciation.

The longest and most interesting chapter in the book is that on Pernicious Anæmia. Eleven eases are recorded at length, and form a valuable contribution to the literature of this mysterious disease. We can indicate only a few of the more striking points which are brought out by the careful observations of Dr. Laache. He finds that not only can life persist when the number of red corpuscles falls below 500,000 per cubic millimetre, but that recovery can take place from such a condition. The regeneration of the corpuscles is often inconceivably rapid, and in some instances a remarkable increase in the number of corpuscles occurred shortly before death. The most extreme degree of anæmia may persist for a considerable time without necessarily causing fatty degeneration either of the heart or of the epithelium of the larger glands. The not infrequent increase of uric acid and of urea in the urine, and the occasional occurrence of leucin and tyrosin while the urea shows no diminution, together with the presence of peptone, other forms of albumen being absent, are worthy of note. In two cases a remarkable increase in the severity of the disease occurred, accompanied by grave cerebral symptoms, seeming to indicate immediate dissolution, but from this condition, which the author styles a "catastrophe," a rapid improvement took place, in one instance accompanied by the formation of several abscesses. This sudden improvement following the previous apparently hopeless condition, had all the appearance of a crisis in an acute disease.

The blood corpuscles in pernicious anæmia were found to vary greatly in size—from 4 to 11 or even 15 micro-millimetres. Those of large size were much more numerous than the smaller, and, in consequence, the blood in this disease presents a remarkable and characteristic peculiarity—namely, that the reduction in the number of the corpuscles is greater than that in the quantity of hæmoglobin, so that the value of the corpuscles is greater than normal. In this respect it differs from all other kinds of anæmia, since in these the value of the corpuscles either is unaltered or is below normal.

The presence of microcytes, on which much stress has been laid as diagnostic of pernicious anæmia, is found to be neither peculiar

to, nor characteristic of, this disease. The small *globular* bodies to which this term was applied by Vanlair and Masius, and which are considered by Eichhorst as indicative of pernicious anæmia, are believed by Dr. Laache to be due to the action of diluting fluids added to the blood, or of other external agencies. To the same causes he attributes the poikilocytosis or variability in the shape of the corpuscles noticed by Quincke and most other writers. In this view we believe the author to be altogether wrong. We have repeatedly seen microcythæmia and poikilocytosis in blood carefully examined without the addition of any fluid, and we consider these conditions as highly characteristic of pernicious anæmia. We can, however, confirm the observations regarding the increased value of the corpuscles in this disease, which we have been in the habit of attributing, as Dr. Laache does, to the considerable number of abnormally large corpuscles which are present in the blood.

In leukæmia the reduction of the number of red corpuscles is usually comparatively slight, and even shortly before death seldom exceeds 50 per cent. After hæmorrhage, too, occurring in this disease, the regeneration of the corpuscles may be as rapid as in a healthy person. The amount of colouring matter present is in proportion to the number of corpuscles. The symptoms in leukæmia can, therefore, not be attributed to an oligocythæmia.

While the author considers the value of arsenical treatment doubtful in pernicious anæmia, he finds it of extreme value in leukæmia, in which disease its action is not so much to increase the red as to destroy the white corpuscles, so that the disproportion in these bodies is lessened.

In pseudo-leukæmia the diminution in the number of the red corpuscles is relatively slight. In one case the interesting observation was made that during the attacks of irregularly intermitting fever from which the patient suffered, the enlarged glands always underwent a diminution in size. Transitional forms are described between pseudo-leukæmia and true leukæmia, but while cases are not wanting which seem to be related to both Hodgkin's disease and to pernicious anæmia, the author thinks that at present it is safer to look on these two diseases as distinct.

Appended to the text are a large number of plates, in which the variations in the condition of the blood of most of the cases described are expressed in curves, also several temperature charts.

The work is, we think, a valuable contribution to our knowledge of the pathology of the blood. The labour which has been ex-

pended on it can be appreciated only by those who have some practical experience in counting the blood corpuscles, and who know the drudgery of such estimations.

A Manual of Hypodermatic Medication. By ROBERTS BARTHOLOW, M.A., M.D., Prof. of Materia Medica and General Therapeutics in the Jefferson Medical College of Philadelphia, &c., &c. Fourth edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co. 1882. Pp. 365.

So many new remedies are almost daily introduced into practice for administration by the subcutaneous method, and so many new applications of old remedies in the treatment of disease by the same method are being so frequently suggested, that a manual such as this of Dr. Bartholow has become to be almost essential. The fact that within a few years the author has been called upon for a fourth edition shows alike the demand for such a book, as well as the rapid progress made in the form of therapeutics it deals with, most of which is fully incorporated in the work under notice. The substitution by Dr. Bartholow of the term "hypodermatic" for the more familiar word "hypodermic" deserves recognition, inasmuch as, if we mistake not, Dr. Bartholow some time ago urged that as the term "hypodermic" was so firmly established in ordinary usage it should be continued. There can, however, be no doubt, as Dr. Kane* and others have adduced scholarly authority for, that according to the analogy of other formations in Greek, and from the actual usage in derivative words of this form, hypodermatic is the correct form. In the majority of the analagous English words—*e.g.*, dogmatic, rheumatic—we see the ordinary Greek used, and there is no case in Greek to justify hypodermic.

The first two chapters deal with the "History of Subcutaneous Medication," and "The Method" by which this form of treatment is carried out, full credit being given to the late Mr. Rynd, of the Meath Hospital, one of the pioneers of this mode of administering drugs. Then follows a list of some fifty preparations for subcutaneous use, with their origin. Next is a chapter on the local and systemic effects of subcutaneous injections, and then comes chapter on each of the remedial agents that are employed hypodermatically. The arrangement of these latter chapters is on the same plan. A historical notice of the employment of the drug subcutaneously is

* "The Hypodermic Injection of Morphia." New York, 1880. P. 7.

first given; next its most suitable preparation and dose for hypodermatic use are defined, its physiological effects are then very fully discussed, and finally its "therapy," or the diseases and conditions in which its administration has been adopted, or is recommended, is given in a definite order and in detail.

In the subcutaneous administration of morphia, Dr. Bartholow still favours a rather dilute solution—sixteen grains of the sulphate to an ounce of water, fifteen minims of which contain one-half a grain. The advantages of this solution, he claims, are complete solubility and sufficient concentration for the fullest effect of the morphia. He holds that morphia should always be given with atropia, unless some contraindication of the latter exist. But the circumstances in which both or either, or either alkaloid in excess, should be preferred, are given in full and with admirable clearness. Extemporaneous solutions, he considers, are much superior to any so-called permanent ones; and he approves of the newly-introduced "hypodermic tablets" as being convenient, safe, and permanent. The tartrate of morphia recommended by Mr. Erskine Stuart[a] as the best preparation of the alkaloid for subcutaneous injection, and the glycerole of nepenthe, which is used hypodermatically by some practitioners in this city in preference to all other preparations from opium, are not alluded to by Dr. Bartholow.

As might be expected in a work by so well-known a therapeutist, many points of therapeutical interest and importance are given throughout the work. Thus we find it positively stated that "an attack of *pneumonia* may be prevented by a full dose of morphia at the formative stage;" also that in pleurisy "it is possible by a timely use of the remedy to abort an attack. If the disease has passed the initial stage, the same treatment is best up to the occurrence of exudation." Obstinate hiccough which resists ordinary means yields, we are told, to pilocarpine or to chloral hydrate hypodermatically. A not uncommon practice in cases of chloroform narcosis, which we have seen adopted, is censured—viz., the hypodermatic injection of ether. This, as well as injections of alcoholic liquids, is said to intensify the narcotic condition. A considerable portion of the book is occupied by a description of the antagonism between each other of several of the active principles considered in the text. These sections are transferred at length from the author's admirable Cartwright lectures on the "Antagonism

[a] Edinburgh Jour. of Med., March, 1879; *vide* also Brit. Med. Jour., 1880, Vol. II., p. 1043.

between Medicines, and between Remedies and Diseases."[a] While doubtless tending to increase the scientific value and size of the present work they are perhaps a little out of place in a publication which we think has its chief value as a useful and handy manual of reference and guidance to the practitioner in his daily treatment of disease.

A Compend of the Practice of Medicine. By DANIEL E. HUGHES, M.D., Fellow of the College of Physicians of Philadelphia, &c. Part I. London: Henry Kimpton. 1883. Pp. 105.

THIS is an English edition of one of some recently published American so-called "Test Series" of books, "especially adapted for the use of medical students." Fevers, diseases of the gastro-hepatic and renal systems, and some general diseases are very sketchily treated of in it. We must say, however, that more attention is given to treatment than in other works of the same objectionable class. Some of the statements made are, to say the least, opposed to experience in this country. For instance, the rash of enteric fever is said to appear on the seventh day upon the abdomen in the form of a few reddish spots "resembling flea bites." It is also stated that the eruption in this disease is "almost constant," and that if diarrhœa be absent the lesion is slight.

VERATRUM VIRIDE IN ENTERIC FEVER.

DR. A. W. NELSON contributes a paper to the April number of the *Archives of Medicine* on the treatment of the above disease by veratrum viride, based upon 28 successive cases in private practice, all of which recovered. The preparation used was the officinal (U. S. Ph.) tincture, and the doses were from one to two drops per hour, with little other medicine, if any, from the setting in of the disease to convalescence. The effects of this treatment in lowering the pulse and the temperature were appreciable. [According to the United States Dispensatory (Wood and Bache, 15th Ed., 1883) the British Pharmacopœial tincture is much weaker than the American one—the proportion of the root to the menstruum being in the latter about as one to two, and in the British about as one to five.—ED. PERISCOPE.]

[a] New York: D. Appleton & Co., 1881. Pp. 119.

PART III.

HALF-YEARLY REPORTS.

REPORT ON MIDWIFERY AND DISEASES OF WOMEN.

By William C. Neville, M.A., M.D., Ch.M., and M.A.O., Univ. Dubl.; Fellow and Member of Council, Academy of Medicine in Ireland; and late Senior Assistant Physician, Coombe Hospital, Dublin.

1. CORRELATION BETWEEN OVULATION AND MENSTRUATION.[*]

It is a curious circumstance of constant recurrence, and peculiar to no one branch of science in particular, that some of the commonest problems, upon which at first sight we might expect to be able easily to arrive at sound and enduring conclusions, are those very ones which longest escape solution. Thus, for example, the causes which govern so common and narrowly defined a phenomenon as that of labour at term, ample as our opportunities are for studying them, have so far received no satisfactory explanation. And thus too the nature of the relationship existing between ovulation and menstruation, which seemed so clear to our immediate predecessors, is a question concerning which, of late, there has been exhibited a growing diffidence and divergence of authoritative opinion. Here, as in other questions, doubts have grown despite, or more truly in consequence of, the much larger grounds for decision which have been opened up by recent advances in ovarian surgery.

Though a like view had previously been set forth by Themmen, of Leyden, in 1781, by Power, of London, in 1821, and by Gird-

[*] Recherches sur les Suites-Éloignées des Opérations d'Ovariotomie.—Le Bec: Archives Générales de Medicine. Juin, 1882.—Des Troubles de la Menstruation après les Lésions Chirurgicales ou Traumatique, et après l'Ovariotomie.—Terillon: Annales de Gynécologie. Sept., 1882.—L'Ovulation dans ses Rapports avec la Menstruation et la Fecondation.—Gallard: Annales de Gynécologie. Novembre and Decembre, 1882. Diseases of the Ovaries. Chapters I. and VI.—Lawson Tait. 4th Edition. 1883.

wood in 1826, it was Négrier, of Angers, who, between 1830 and 1840, first systematically taught the necessary correlation of the maturation and dehiscence of Graafian follicles with the phenomena of menstruation. Négrier was followed and supported by Gendrin, Raciborski, Coste, Bischoff, and others, to whose combined advocacy the ovular theory of menstruation owed its general acceptance. According to this theory the menstrual flow is simply the outward manifestation of a widespread and intense congestion of all the generative organs, the *primum mobile* or essential antecedent of which congestion is to be sought for in the ovary, and more particularly in the periodic maturation of a Graafian follicle, culminating about the time of the flow in its rupture and the escape of an ovum. Menstruation is periodical, because its primary and essential element, ovulation, is periodical. This view at first rested upon considerations such as the following:—

(1.) *Post mortem* examinations made upon women who had died during, or shortly after, a menstrual period showed that a Graafian follicle was either projecting, and about to rupture, on the surface of the ovary, or that one had but recently so ruptured.

(2.) It was a matter of common experience that pregnancy occurred only between the time of puberty and that of the menopause; thus suggesting the inference that ovulation is in the main, at least, coeval with that period of a woman's life during which the menses appear. Hippocrates, to whom this fact was known, had likewise observed that sexual intercourse about the time of the menses was more fruitful than at other times. Anatomically also these facts were explained by the quiescence of the ovary before puberty, and by its atrophy after the menopause.

(3.) The effect of congenital defect or absence of the ovaries in causing amenorrhœa was noticed. Tradition had ascribed to the castration of young girls the subsequent entailment of amenorrhœa and assumption of a more virile type of physique. These results had followed upon the ablation of both ovaries of a young woman, aged twenty-three, by Percival Pott (1756) for double inguinal ovarian hernia. This woman previous to the operation had menstruated regularly; after its successful performance the menses ceased to appear, the breasts atrophied, and the entire muscular system increased so as to approximate in strength to that of a man.

(4.) Coste particularly studied the phenomena of "heat" or "rut" in other mammalia. He established the fact that in them the tumidity and congestion of the external sexual organs, usually

accompanied by some mucous (sanguineous in some monkeys) discharge, was always symptomatic of the maturation of one, or, more commonly, of a cluster of Graafian follicles. Removal of the ovaries caused disappearance of the "rut." An analogy, very favourable to the ovular origin of both, was thus suggested between rut and menstruation.

These formed in the main the earlier grounds upon which rested the ovarian theory of menstruation; and though their individual force suffered when it was shown that their truth was not without, at least, some apparent exceptions, their collective weight secured its general acceptance. And, with some explanations and reservations necessitated by fuller knowledge, the doctrine of ovarian dominance still holds its own among leading physiologists.

Thus, to quote but a single authority, Foster ("Text Book of Physiology," 4th Edition, 1883, p. 669) writes:—

"From puberty, which occurs from thirteen to seventeen years of age, to the climacteric, which arrives at from forty-five to fifty years of age, the human female is subject to a monthly discharge of ova from the ovaries, accompanied by special changes, not only in these organs, but also in the Fallopian tubes and uterus, as well as by general changes of the body at large, the whole constituting menstruation. The essential event in menstruation is the escape of an ovum from its Graafian follicle. The whole ovary at this time becomes congested, and the ripe follicle bulges from its surface." It will be noticed that Foster does not expressly state that ovulation is the cause of, only "the essential event in, menstruation." Further on in the same chapter, however, he writes that he sees no reason for not accepting what we believe is generally known as Pflüger's explanation of the periodical menstrual congestions. According to Pflüger the common concurrence of menstruation and ovulation is thus explained. The continuous growth of Graafian follicles acts as an irritant on the sympathetic nerves with which the ovaries are so richly supplied. The sum of the irritations thus engendered and stored up become from time to time productive of cumulative effects; the results of which are seen in the periodic recurrence of a marked and prolonged reflex arterial congestion of the entire generative system. The usual outcomes of these menstrual congestions are ovulation on the part of the ovary, and menstruation on that of the uterus. Coste and others had, indeed, already seen that the determining factor in menstruation existed in the maturation rather than in the rupture of the follicles.

These views have been for a considerable time taught in the majority of text-books which deal with the question of menstruation. On the other hand, there are not wanting reliable authorities who find in all, and especially in recent, evidence on this subject just grounds for doubting or denying the primary importance of the ovaries. Among gynæcologists who have thus advocated the independence of the uterus are—Aran, De Sinéty, Reves Jackson, P. Mundé, Scanzoni, Beigl, and Lawson Tait. Aveling has even gone further in claiming for the changes in the mucous lining of the uterus a prime importance in all the associated events of menstruation. In attempting to form definite views, and weigh evidence on the question—Is there a necessary connexion between the development of Graafian follicles and menstruation?—we have received much assistance from the papers mentioned at the commencement of this article. Largely guided by these, we shall briefly state the nature of the evidence itself, and the conclusions towards which it tends.

The arguments of those who are opposed to the ovarian theory are based chiefly upon evidence showing that—(1) ovulation may occur without menstruation; (2) that menstruation may occur without ovulation; (3) that menstruation may go on in the entire absence of ovaries, as after successful double ovariotomies.

There is no need to examine in detail all the evidence which has been adduced to establish these several points. Certain parts of it may be at once discarded as having no real bearing on the question at issue. Such, for example, is the evidence, which has certainly shown that in many cases during the menstrual life of a woman rupture of an ovisac and menstruation may occur one without the other. Almost every recent adherent of the "ovular theory" admits that in certain cases not only may an ovum escape during an intermenstrual period, but also that it may fail to escape during the continuance of menstruation. It is contended that the cause of the periodic flow exists not so much in the rupture of ovisacs as in their gradual growth and maturation, of which rupture is only the terminal event. It is easy to see how it may happen that, no Graafian follicle having previously attained to a sufficient grade of ripeness and protrusion, no escape of an ovum may occur during the period of menstrual congestion. Such a period is only much the most likely one at which to expect an escape to take place. *Post mortem* examinations made during or immediately after the flow have, therefore, not seldom failed to show a fully-

ripened follicle or signs of a recent rupture, though in the great majority of cases such signs have been found.

Neither can there be any doubt that the ovisac may rupture during an intermenstruum. Here the rupture may be the result of the ovarian congestion and tension which accompanies coitus; or it may be that a follicle which has only just fallen short of rupture during the preceding period has survived to reach its fullest development and rupture before the advent of the succeeding one. Such facts do not in the least affect the question of ovarian dominance, nor materially lessen the probability of the truth of Pflüger's hypothesis.

Again, there is a class of cases to the evidence obtained from which, in our opinion, no serious weight can be attached. Such are the fairly numerous cases in which the apparent or occasional independence of the ovarian and uterine processes may quite easily be accounted for by the presence of some general or local pathological condition. It is always difficult and hazardous to frame physiological conclusions upon pathological data, though in the question under discussion such an inverted process of reasoning has frequently been made use of. Gallard (*op. cit.*) gives some examples of this doubtful kind. One case, cited by Aran, is as follows:—A woman, aged sixty-four; afflicted with valvular disease of the heart; her menses disappeared between the ages of forty-eight and fifty-two, and reappearing at the latter age recurred "regularly every three or four weeks" until her death. An autopsy showed two atrophied ovaries, with no traces of recent activity; an enlarged and softened uterus, with hyperæmic mucous membrane, and containing in its cavity a recent blood clot. It requires no consideration to show that in this woman the recurrent uterine hæmorrhages were due entirely to the state of the heart, and that they possessed no true analogy with the menstrual flow. They commenced four years after the establishment of the menopause; and their somewhat uncertain periodicity gives some interest to an otherwise ordinary case, as probably indicating the enduring effects of a former habit. De Sinéty, quoted by Gallard, narrates the case of a consumptive, who died in a Paris hospital. Though she had not menstruated for many months before death an autopsy showed the existence of a quite recent corpus luteum on the surface of one of her ovaries. But clearly such a case is quite devoid of real weight, since in a woman worn down by any such wasting disease as phthisis, which cripples vitality and depreciates the blood, the normal ovarian stimulus might easily fail to excite the

congestion required for menstruation. Indeed, we know that amenorrhœa is the rule in phthisis, ovulation being also most commonly in abeyance, during its latter stages at least. Before physiological conclusions can with justness be deduced from the facts of individual cases it is requisite that we should be assured that the numerous controlling circumstances are also physiological; that the generative organs are themselves healthy and normal, and that their vascular and nervous nutrition is of a physiological kind. If, then, general pathological conditions, or depraved states of the blood, in many cases hamper or introduce elements of doubt into our conclusions, it must be doubly clear that the presence of local (uterine or ovarian) disease should make us scrupulously careful in deducing them from particular instances. And much of the evidence brought to prove the independence of the ovaries and menstruation is open to question through its having been drawn from such assailable sources. Lawson Tait, however, supports his view, that ovulation and menstruation are wholly independent, by a series of remarkable statements which, if proved, would go far towards warranting this part of his contention. Let us examine these statements a little in detail:—

1. "It is perfectly certain that ovulation is by no means a periodic process, in the sense of being monthly." Tait does not rely on an occasional intermenstrual rupture of an ovisac and discharge of an ovum; he denies its periodicity altogether. Nor, according to this authority, is this process by any means limited to the period of a woman's menstrual life, for "ovulation goes on before puberty and after the climacteric freely." Tait states that in the course of his operations he has frequently seen an ovisac either about to rupture or just ruptured during an intermenstrual period, and that in neither of two cases in which he had occasion to remove the ovaries with the tubes attached to them during a menstrual period were ripened follicles found. Against the conclusion which he draws from these cases, however, must be put the evidence given by almost every other observer—that in the great majority of cases menstruation is coincident with ovulation. Even De Sinéty sums up his conclusions on this question by admitting the usual coincidence, though he denies the necessary relation of these two phenomena. Tait's experience is altogether exceptional, while it is open also to the criticism that it is founded on cases where operative interference became necessary in consequence of local pathological conditions.

Tait adduces no evidence whatever in support of his assertion

that ovulation goes on quite freely before puberty; though, if true, abundant evidence on this point could readily be forthcoming. He quotes De Sinéty and Haussmann on the subject of the ovarian activity often marked during the first months of infantile life, though in these cases the rapidly enlarged follicles disappear by a slow process of retrogression, and do not seem to rupture and discharge their ova as in subsequent life. Thus he writes:—"This ovarian activity seems to cease about the third month," and changes of structure occur from which it results "that *by the seventh month the ovary presents all the appearance which it has just before puberty, and up to that time little else can be said of the history of the gland.* The only point which remains to be settled is whether or not the premature Graafian follicles ever rupture and discharge their nucleus into the peritoneal cavity." [The Italics are ours.] It seems to us, therefore, that Tait's subsequent assertion that "ovulation goes on freely before puberty," &c., is devoid of foundation, even upon his own statement of the facts, and that it is scarcely needful to invoke the authority of other observers. It is at least certain that the regular ovarian activity, as displayed in the constant growth, ripening, and rupture of the follicles during the menstrual life of a woman, has never been shown to go on before puberty. And the same remark applies after the climacteric, for though then, as before puberty, an isolated growth and rupture may, from the evidence, be assumed occasionally to occur, there is nothing to show that the activity is constant, or that it affects the ovaries in their entirety. And, as before stated, it is the crescent irritation which results from the general Graafian development, rather than to the rupture of a single follicle, that the periodic congestions of menstruation are believed to be due. It is indeed essential to recognise the fact, often ignored or forgotten, that the phenomena of menstruation are not isolated, but are the culminating results of an entire period's growth and nutritive changes, just as labour at term is the terminal fact or outcome of ten months' gestation changes.

2. Tait states that "the fact that a periodic flow from the uterus is almost confined to the human race is sufficient to show that it is not in the ovaries we have to look for the cause of this curious and objectionable phenomenon." And again, "That menstruation is a new feature in sexual life, introduced high up in the scheme, and has no analogy to the œstrus or rut among the lower animals, is surely proved by the close reasoning of Arthur Farre" (Article, "Uterus," Encyclop. of Anat. and Physiology).

We confess ourselves quite unable to appreciate the force of the first of these statements, inasmuch as the same reasoning would equally apply as against the doctrine of Tait himself, that the mainspring of menstruation is to be found in the Fallopian tubes, since none of a woman's generative organs are peculiar to the human race. Broca, moreover, has stated that a periodic sanguineous flow comparable to menstruation is met with among some apes. But periodic generative congestions are common throughout the mammalia, the "rut" being commonly attended by a more or less copious mucous discharge—a phenomenon which we see, under certain conditions, in some women in whom the more usual menstrual discharge of blood is replaced by what are known as "white changes." We have sometimes noticed this latter occurrence well marked in women whose blood had been depreciated in quality by diseases such as phthisis or chlorosis. And we have also seen the period of "heat" in bitches, highly fed and kept in confinement, attended by a distinctly bloody discharge. Though we are not acquainted with any special researches on the subject it appears to us that hæmorrhages from mucous membranes are much more frequent and easily excited in the human kind than among lower animals. It is an interesting question which may also be considered as to how much the characters of the menstrual flux in women may be credited to their erect position, the nature of their food, and the artificialities of civilisation. Wherefore we think it is the periodicity of these generative congestions rather than the characters of the discharges consequent upon them that is of prime importance. And despite the able article of Farre, the analogy between menstration and rut has been generally accepted as true in its essential points. Thus De Sinéty, whose opinion may again be quoted as that of an acknowledged authority and strong opponent of the ovarian theory, says: "Rut in animals and menstruation in women have with reason been compared. In the former periodicity is as marked as in the latter, only at more distant intervals. The intervals may be shortened by a variety of causes, such as good feeding, the constant presence of the male, captivity," &c. ("Manuel Pratique de Gynécologie," 1879, p. 547).

3. Tait states: "Where the cause" (of menstruation) "does exist we do not know, but it is quite certain that as it continues for months in some cases after the removal of both ovaries it cannot be in those glands."

It is somewhat curious that the remote results of double

ovariotomies have supplied with their strongest arguments both the advocates and opponents of the ovarian theory of menstruation. "In most cases removal of both ovaries arrests the function immediately" (Tait, *op. cit.*)—an undisputed truth, which was hailed by the former as of the nature of a crucial and decisive experimental proof of the truth of their doctrine. *À priori* this is the result for which they looked. On the other hand, numerous cases have now been recorded by almost all the leading ovariotomists which appear to prove that the rule lacks universality. If, then, extirpation of both ovaries failed to ensure, even in a few cases, the cessation of the menses, it followed that the essential antecedent of menstruation could not be sought for in an ovarian stimulus. On either hand, some reasonable explanation of such variable results was necessitated. Meanwhile the successes of abdominal, and more especially of ovarian, surgery emboldened Tait, Hegar, and Battey, with a curious coincidence of time and thought, to open up new fields of experience by the removal of small ovaries. Battey, who was the first of these surgeons to publish and justify the operation, avowedly operated with the intention of inducing a premature menopause by removing ovaries—not necessarily diseased—in cases where ovulation with its attendant menstrual congestions might be held to jeopardise the life or reason of a patient. The *rationale* of his operation depended on the expressed postulate that ovulation and menstruation were necessarily related, and that castration would ensure the menopause as a sequence. Tait has enlarged the scope of Battey's operation, or rather has added another by the removal of the Fallopian tubes along the ovaries in a variety of pathological conditions. These operations have since been largely practised, and with an amount of success which has added largely to the material previously available for judging of the effects produced on the menstrual function by extirpation of the ovaries.

Le Bec has made these and other results of ovariotomy the subject of an interesting and really valuable monograph, in which he has brought to a focus a large number of the recorded opinions and facts which bear on the question.

The usual result of a single ovariotomy is that menstruation is unaffected. No case, so far as our knowledge goes, has been recorded of such an operation giving rise to a cessation of the menses—an important consideration in view of the recognised rule that such a result almost always follows the double operation. And Spencer Wells ("Ovarian Tumours," 1882, p. 477) says

that: "In several patients whose menstruation before operation had been irregular and painful it became quite regular and normal afterwards." Le Bec and Terillon likewise record cases in which previous menstrual troubles, including amenorrhœa, have been relieved by the single operation.

Let us now consider the evidence arising out of those cases in which a menstrual flow, or one somewhat resembling it, has continued to appear after an assumed total extirpation of ovarian structures. Such cases range themselves in two groups.

The first and largest group is made up of cases in which double ovariotomies were followed by a few occasional and irregular discharges of blood, simulating those of the menses in no essential particular, and in which a complete cessation followed before many months had passed. The most frequent type of these irregular hæmorrhages is that in which the discharge commences within a few days after the operation, continues for two or three days, and then passes away not to occur again. Terillon recounts cases of this kind, which, adopting Gubler's term, he considers as examples of "uterine epistaxis," a "phenomenon absolutely fortuitous, and possessed of no influence on the succeeding menses," and of occasional occurrence after operative or accidental injuries of all kinds, but especially those of the sexual organs themselves or the breasts. It is by no means difficult to understand how, even after complete removal of the ovaries, such an epistaxis might repeat itself a few times from an organ in which the habit of regular losses of blood had become ingrained. But such losses are clearly separated from those which are truly menstrual by their want of periodicity, and by the absence of the constitutional symptoms which usually accompany or precede the latter. They do not, therefore, affect the question under consideration.

The second group comprise those rarer cases in which a periodical flow, indistinguishable in its local and constitutional characters from that of menstruation, has continued to appear after double ovariotomies. The "Memory of the Body" is hardly to be accepted as sufficient explanation of a resemblance which is strictly a verisimilitude. Either ovarian structures are not essential to true menstruation, or the extirpation has been incomplete. The general tenor of the evidence would not lead us, in the absence of clear proof to the contrary, to infer the latter as the more likely interpretation of the facts. For, if menstruation is independent of ovarian activity, how explain the certain clinical evidence that

while removal of one unhealthy ovary leaves menstruation unaffected, removal of two ovaries in the great majority of instances abolishes it. And that this explanation is no merely hypothetical one, but that it is well sustained by the facts of some cases, has been now conclusively established. Such facts are those which show—(1) that portions of ovarian tissue have sometimes been left in one of the pedicles after double ovariotomies, assumed at the time of operation to have been complete; and (2) that supernumerary ovaries possessing a normal ovarian structure are occasionally met with. Either explanation sufficiently accounts for what was until lately a puzzling and unexplained occurrence.

(1.) Battey has found the menopause to follow double ovariotomies save in cases in which he has had reason to believe that total extirpation had failed in consequence of the difficulties which presented themselves in the form of dense and numerous adhesions. It was sometimes impossible to state that a portion of the ovary might not have remained below the grip of the ligature. He records such a case in which normal menstruation returned, followed by pregnancy in a patient from whom he had tried to remove both ovaries completely for the cure of pain and menstrual epilepsy. Le Bec quotes Hegar as the authority for the following case:—"Weinlechner performed a double ovariotomy on a young woman who had menstruated only three times. The menses continued regularly for eight years after the operation, when a tumour as large as an adult's head developed itself. On removing it this tumour proved to be a cyst developed in the remains of the left ovary, which had not been quite thoroughly extirpated." Le Bec draws his conclusions on this point in the following passages:—"I cannot easily believe in the return of the menses after a double ovariotomy, since the sources of error appear to be very numerous. A piece of an ovary healthy or diseased only in part may be forgotten, the pedicle being in many operations only a product of manufacture. Hence it may happen that a portion of an ovary—part of a cyst wall perhaps—may be overlooked by the ligature, and may permit the subsequent growth of Graafian follicles. This is an assured fact, Waldeyer having found ovarian structures in the substance of the pedicle." These facts have also been accepted by other authorities, and show that a double ovariotomy, especially when it has been attended by much difficulty, cannot be taken as synonymous with the total extirpation of ovarian tissues, including its follicles.

(2.) Small supernumerary glands, of a true ovarian structure, occur perhaps more frequently than might be expected. Beigl, quoted by Le Bec, found this anomaly twenty-three times in 500 dissections. Klebs, Olshausen, De Sinéty, Winckel, and others, have likewise met with this anomaly. Perhaps the small size of these accessory organs, seldom much larger and commonly smaller than a bean, may have prevented their more common recognition. Tait has not himself seen them. Spencer Wells mentions the fact incidentally that in one of his eighty-two cases of double ovariotomy he saw three ovaries. Tait, though he has not himself seen them, alludes fully to their literature, and says:—"These accessory ovaries show, by the active growth of their follicles, that they have a distinct physiological importance." It is all the more curious, therefore, to find him subsequently relying so much on the occasional occurrence of menstruation after an assumed total extirpation of the ovaries. It clearly results from both these orders of facts that we have solid reasons for doubting the real validity of the weightiest evidence brought against the ovarian theory of menstruation. It is, indeed, quite consistent with evidence to assume that instances of true menstruation have followed only on incomplete removal of ovarian structures, while the infrequency of these instances gives to such an assumption the weight almost of a certainty.

The ultimate result of Battey's, Tait's, and Hegar's operations, so far as they have been reported in complete cases, strongly point to the accuracy of the theory upon which they were based. Thus Battey reported 121 such cases at a meeting of the International Congress of London, with the result of 88 cures, 22 improvements, and 11 not benefited. This general success has been much more marked where the operations were performed for the cure of hæmorrhage, especially that due to fibroids. Most of the failures occurred after operations performed for nervous symptoms, supposed, no doubt at times wrongly, to depend on ovarian causes. And although Tait removes the Fallopian tubes along with the ovaries, in some cases because they are diseased and in others in accordance with his belief that in them resides the cause of menstruation, we are not aware that he or any other investigator has shown that removal of the tubes by themselves, either from women or lower animals, would be followed by a cessation of periodical congestions—only we know that in a case of Spencer Wells, quoted by Le Bec, removal of both tubes and of a portion of one ovary was *not*

followed by any marked change in the menstrual function. Spencer Wells suggests that the effect of removing the oviducts, such as it is, may be accounted for by the ligature of the spermatic arteries at the same time—a suggestion, however, which, according to Tait, is without foundation in fact or theory. Having regard then to the light shed upon this question by the results of recent ovarian operations, viewed as so many physiological experiments, we see no reason for discarding the ovarian theory. Rather do we regard the experience which has been added to our store as putting this theory, in its essential points, upon a firmer basis than ever.

(*To be continued.*)

THE VENOM OF SERPENTS.

In a preliminary report on the venoms of serpents, in the *Philadelphia Med. News* of April 28th, Drs. S. Weir Mitchell and E. T. Reichert announce that they have made a remarkable discovery in the toxicology of this subject. They have investigated the venoms of all the American serpents, and their study has resulted in the isolation of three distinct proteid bodies. The fact that one of these proteids remains uncoagulated by boiling, and will dialyse, renders it certain, they state, that it belongs to a peculiar class of bodies which are ordinarily the result of peptic or tryptic digestion, and are known as peptones. This peptone not only gives certain reactions, which are so novel as to give it distinguishing characters from all other bodies of its class, but also, what is much stranger, is the only peptone they have discovered as yet known to constitute a portion of a secretion, or to originate within the living body in any way except as a product of the digestion of proteids. Up to this date all observers have regarded the venoms as representing a single poison. Drs. Mitchell and Reichert, however, have been able to show that the venom of the *Moccasin* and *Crotalus adamanteus* contains three proteids—one analogous to peptones, and a putrefacient; one akin to globulins, and a much more fatal poison, probably attacking the respiratory centres, and destroying the power of the blood to clot; and a third resembling the albumens, and probably innocent. Finally, we have learned that the poisons of the rattlesnake (*C. adamanteus*), copperhead (*Agkistrodon contortrix*), and moccasin (*Toxicophis piscivorus*), are capable of being destroyed by bromine, iodine, bromohydric acid (thirty-three per cent.), sodium hydrate, potassium hydrate, and, as Lacerda has shown, by potassium permanganate. In the previous number of the same journal (April 21) the value of iodine administered internally as an antidote for snake bite is borne out by the report of two cases successfully treated by this drug by Dr. George H. Carpenter.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. Banks, M.D.
General Secretary—W. Thomson, M.D.

OBSTETRICAL SECTION.

President—John Denham, M.D.
Sectional Secretary—William C. Neville, M.D.

Friday, March 30, 1883.

The President in the Chair.

The Third Stage of Labour.

Dr. R. Henry read a paper on the importance of the third stage of labour. He commenced by pointing out the various risks, immediate and remote, to which the improper performance of the third stage of labour exposed a woman. These risks would be minimised by a suitable conduction of this most important period of labour. To arrive at any just conclusion on this subject it was necessary, in the first place, to study nature's methods in effecting the separation and delivery of the placenta and membranes—by the conjoint action of tonic and clonic contractions moulding the placenta, as had been described by Dr. Matthews Duncan, or in the different way described by Schultze. In the author's experience both these methods had been observed, a lateral attachment of the placenta being Duncan's, while a fundal or nearly fundal one would give Schultze's. The former was the more common method. Dr. Henry quoted Denman, Smellie, Collins, and others on the question of manual interference in the third stage. In 1786 Dr. Joseph Clarke had advised the practice of "pursuing with a hand on the abdomen the fundus uteri in its contractions until the fœtus be entirely expelled, and afterwards continuing for some time this pressure, to keep the uterus if possible in a contracted state." This practice had been largely adopted

in Dublin. Dr. Henry adhered to it, believing that in modern practice undue haste to press off the placenta was constantly exhibited. He kept his hand over the uterus during delivery and subsequently, but forbore pressing or actively supporting the uterus until it had itself commenced to contract clonically. Assistance should only be given with the clonic contractions. A safe and permanent contraction following the expulsion of the secondaries might in this way be usually secured in from ten to twenty minutes. The chief error at present consisted in mistaking constant irritation for support of the uterus.

The PRESIDENT said the paper raised several questions of deep interest as to the time at which the placenta should be removed—the danger on the one hand of being too precipitate, and on the other of leaving in the placenta too long; how far hæmorrhage was sometimes induced by a too speedy removal, and at other times by leaving the placenta too long in the uterus; and also as to the danger of leaving in portions of the membranes.

DR. HARLEY objected altogether to premature pressure over the fundus of the uterus, for the purpose of pressing off the placenta. He also objected to exercising pressure on the cord at any period.

DR. W. J. SMYLY stated that in the Strassburg Hospital, where the patients were, as a rule, left to nature during the third stage of labour, it had been observed that the placenta was most frequently expelled in the manner described by Schultze. He believed that Credé's method of exciting the uterus to contraction had been confounded with the hasty expulsion of the placenta. Credé himself never advocated the immediate expression of the placenta, but rather the immediate excitation of the uterus by irritation and friction through the abdominal walls, and then usually with the third or fourth contraction the expression of the afterbirth. The immediate expression of the placenta was very liable to be followed by the retention of the membranes and *post partum* hæmorrhage.

DR. MACAN said that since the time of Hippocrates there had been ebbs and flows of opinion as to whether expulsion of the placenta should be left entirely to nature, or should be immediately effected by the accoucheur, either by passing the hand into the uterus, as the older authorities recommend, or by the more modern treatment of expression. Hence he thought that a happy mean between these two methods was probably the best way; for if the uterus was well contracted there need be no fear of hæmorrhage and therefore no cause for hurry, while if the uterus was relaxed with hæmorrhage the removal of the placenta tended certainly to increase the hæmorrhage by removing all pressure from the mouths of the uterine sinuses, unless the means used to remove it at the same time caused the uterus to contract. The great advantage claimed at the present day by the adherents of the plan of leaving the whole process to nature was that a much larger proportion of the decidua

came away with the placenta than when the placenta was immediately removed. When two such authorities as Dr. Matthews Duncan and Prof. Schultze differed as to the mechanism of the separation and expulsion of the placenta it was pretty certain that there was more than one way, and that both their views were probably right. If they adopted the expression plan, which might, he thought, be called "the Dublin method," they should be careful not to allow the placenta to be suddenly expelled on to the bed; for a sudden strain was thus put on the membranes, and a portion might readily be torn off and left behind in the uterus. This had been looked on as a very serious accident; but he was inclined to think that the mere presence of a portion of the membranes in the uterus for some days after delivery could not be looked on as dangerous, unless air had been allowed to enter and set up decomposition. He also thought that it was very often during the efforts made to remove a piece of retained membrane that the air was caused to enter the uterus. He had often seen a piece of the membrane expelled some days after delivery without being accompanied with the slightest fœtor or giving rise to the least fever. Indeed it seemed to him probable that in hospital practice at least the danger from retention of a portion of the membrane was less than the danger of infection from the hands of the operator in his efforts to remove it. He always waited a quarter of an hour before attempting to press off the placenta, and considered that light friction over the fundus with the tips of the fingers was a much more powerful method of inducing contraction than merely holding the fundus in the hands.

Dr. Neville also spoke.

Dr. R. Henry briefly replied.

The Section adjourned.

MEDICAL SECTION.

President—William Moore, M.D., President K.Q.C.P.

Sectional Secretary—A. N. Montgomery, M.K.Q.C.P.

Friday, May 18, 1883.

The President in the Chair.

Living Specimens.

Dr. C. J. Nixon—Case of aortic aneurism with patency of the aortic valves; anomalous physical signs. Mr. Coppinger—A case of paralysis following gunshot wound of the spinal cord.

Specimen Exhibited by Card.

Dr. J. Magee Finny—Nodose condition of the hairs.

Communications—1. *Exophthalmic Goître; 2. Polypus of the Vocal Cord; 3. Some Forms of Dilatation of the Colon.*

1. Mr. John B. Story read a paper recording three cases of exophthalmic goître. The cases occurred in three women, two of them being unmarried. The following were the points of interest:—Two of the patients were sisters, and the third exhibited the remarkable, and probably unique, complication of double optic neuritis, which, however, had subsided at the time the patient came under observation. In this patient the goître was more marked on the left side, and the palpitation did not occur until five years after the goître and exophthalmos. In the other two the goître and exophthalmos were more marked on the right side, and the palpitations were the earliest symptoms observed. Mr. Story called attention to the support these three cases gave to the theory propounded by Dr. William FitzGerald in *The Dublin Journal of Medical Science* for March and April, 1883.

The President said that, although the disease was almost peculiar to females, he recollected three cases in which it occurred in males, the course being short, not quite eighteen months. On the other hand, he had seen it run on for eight or ten years in females. He instanced a remarkable case in which symptoms of exophthalmic goître occurred temporarily from sudden shock. A young girl opened a letter telling of her brother's death. Her pulse became 140, with exophthalmos and thyroid enlargement. In 48 hours the exophthalmos receded and her pulse fell to normal. To him the disease appeared to be of neurotic origin.

2. Dr. Walter Smith related a case in which he had successfully removed a small polypus from the right vocal cord of a lady, aged thirty years, by Voltolini's sponge abrasion method. About Christmas, 1881, loss of singing voice came on. This was followed by hoarseness, which persisted for a year. In December, 1882, the patient consulted Dr. Smith, who recognised the existence of a pale, red pyramidal tumour attached to the edge and lower surface of the anterior third of the right vocal cord. After a short preliminary training he succeeded in passing a moistened sponge, about the size of a hazel nut, beyond the growth, and then, forcibly withdrawing the sponge through the rima and bearing towards the right, was fortunate enough to detach the little tumour, which came up adherent to the sponge, and was preserved. Immediately after the operation voice was restored, the hoarseness had disappeared, and she was able to sing. Six weeks subsequently she reported herself as perfectly clear in voice. The operation is a safe and painless one, and suited to a limited number of cases.

Dr. Wallace Beatty remarked that the attachment of the tumour to

the under part of the vocal cords favoured its removal by Voltolini's method. He had met another case in which, owing to its position anteriorly, this method failed.

3. Dr. Henry Kennedy read a paper on some of the forms of dilatation of the colon. He began by observing that the affection was frequently overlooked; and in confirmation of this he detailed some cases which were so obscure as to prevent any diagnosis being arrived at, and others in which the diagnosis was wrong. He believed, nevertheless, that a correct diagnosis could be made; but it was necessary that the idea of such a possibility should in the first instance be entertained. The condition of the patients who had this affection was always that of impaired health. With this state when the patients, who were usually thin, were examined lying on their backs, there was chronic tympany, though not necessarily to a great degree. Pressure on the abdomen did not cause pain. In conjunction with these symptoms the author stated that the main characteristics of the disease were the fæcal discharges—always dark, pasty, and unformed. He insisted particularly on the persistence of such discharges for weeks, months, and even years, during which periods the patients were constantly subject to attacks of diarrhœa, acute or chronic, and were liable even to perforation of the bowel and rapid death. Having detailed cases, he considered the prognosis should always be guarded. Treatment could much benefit those cases, but he doubted whether a complete cure could be effected.

Dr. Gunn asked if electricity had been tried, and quoted a case of atonic condition of the large bowel, in which it seemed to have proved of benefit?

Dr. Finny criticising the premises upon which Dr. Kennedy based his cases, said that, although he had laid stress upon three diagnostics of the state of the colon, he had not adduced any conclusive evidence to show that the condition referred to existed. He, too, bore testimony to the great advantages of galvanism applied by a rectal rheophore in cases of atony of the bowels.

Dr. Walter Smith said it should be borne in mind that there were great difficulties in applying any anatomical rules to the living subject, deduced from the position of parts of the dead body.

Dr. Bennett having also joined in the discussion,

Dr. H. Kennedy replied. He said he did not use electricity in any of his cases, nor had he had any *post-mortem* examination. He saw no reason to disassociate the symptoms.

The President congratulated the Section on the success of its first session, which had now come to a close.

CLINICAL LECTURES ON DISEASES OF THE LOWE BOWEL.

By Edward Hamilton, F.R.C.S.I.; Surgeon to Steevens' Hospital.

LECTURE VI.

All mucous canals are liable to narrowing or stricture, as is every day illustrated in the urethra, œsophagus, and pyloric orifice of the stomach. Of all the intestines the rectum is most subject to this disease. I think the term "stricture" should properly be confined to narrowing of the tube caused by interstitial deposit or other structural change in the wall, and not extended to diminution or closure of the canal by the pressure of tumours or growths from without. Such changes may be classified into "simple," "specific," and "malignant." I do not think spasmodic stricture of the rectum has any real existence in surgery. The simple causes may be traumatic, such as the introduction of instruments, foreign bodies, too extensive application of caustic, actual or potential. In the female a special cause may operate—the compression of the bowel between the sacrum and the fœtal head in tedious labours. This may explain the greater frequency of the disease in females than in males—a point insisted on by many authors. Under this head we may also include the results of ordinary ulceration, causing loss of substance and consequent contraction of cicatricial tissue. Repeated attacks of dysentery may lead to plastic exudations in the submucous tissue. This latter is not so common a factor in producing the disease, or we should meet with it more frequently than we do, having regard to the number of persons who suffer from this complaint in hot climates.

We should also, in this connexion, notice congenital, or, as they are termed, valvular strictures, from the appearance which they often assume. I have myself seen few examples which could be referred to this type, but, reflecting on the mode of development of the parts, I can easily understand its occurrence as an approach to true atresia or imperforate anus. Each termination of the digestive canal—the mouth and the anus—is developed as a distinct and separate piece by invagination of the epiblast. They are respectively termed stomodeum, which forms the mouth and pharynx, and proctodeum, which forms the anus. Various degrees of failure in the union of the proctodeum and the lower end of the rectum explain the different forms which atresia may present. A still slighter error of organisation at the point of adaptation explains congenital stricture, which consists of a fold of mucous membrane, crescentic in form, stretched across the canal of the rectum, or a mem-

branous diaphragm, with an opening for the passage of fæces. Prior to and for some time after its union with the anal development the lower end of the rectum is a closed tube. By subsequent absorption of its extremity the canal of the rectum and the anal opening are continuous. Vestiges of this terminal wall constitute the essence of valvular stricture (see Plate). This frequently escapes detection during the earlier period of life, but in young adults may be indicated by habitual constipation, which is most obstinate; and yet it is a matter of wonder how little constitutional disturbance is caused by this error of function, nature becoming tolerant of the condition of the bowel. An examination with the finger will detect either a membrane or a sharp crescentic valve-like fold. This may be simply divided with a probe-pointed bistoury, and the dilatation maintained by the passage of a bougie.

Obstinate constipation is not a very common condition in the early period of life, and its presence should arouse our suspicion of congenital stricture.

As in the urethra so in the rectum strictures may present varieties as to shape and extent. They may be linear or pack-thread, valvular or membranous, continuous or tubular; they may be single or multiple. In the great majority of cases we find one stricture only, and it is within four inches from the anal verge.

All the symptoms of true stricture may be produced by the effects of pressure by various abnormal growths outside the bowel, obstructing its canal. The presence of these can be determined by carefully conducted physical examinations.

The second class of causes—syphilitic—are much insisted on by foreign writers, who seem to regard them as more frequent than all the others. I think, however, from my own observation, this position should be assigned to cancer. That chancroid, or the soft sore of primary syphilis, may, more especially in the phagedænic form, extend from the verge of the anus into the rectum cannot be denied, but the existence of hard chancre or true syphilis any distance in the bowel must be exceptional and due to unnatural causes. I have heard of its having been frequent long ago in our penal settlements, but I have never seen a case of it myself, so that for all practical purposes I think we may exclude from our consideration primary syphilitic ulcers as a cause of stricture. Not so, however, the disease in its secondary and tertiary forms. There can be no doubt that where the blood is highly charged with venereal poison it will retard the healing of any traumatism which may arise, and, by the tendency to plastic exudation of an unhealthy kind, may be the cause of subsequent contraction, which may terminate in actual stricture. These cases explain the beneficial effects which are occasionally produced by small doses of mercury and iodide of potassium. The pressure of bougies also may stimulate the absorption of such deposits.

ATRESIA RECTI (ESMARCH).

CANCER OF THE RECTUM (AGNEW).

John Falconer Del.

Whatever the variety of disease which occasions it the symptoms will be pretty much the same in all—irregularity in the action of the bowels—constipation, succeeded by diarrhœa; mucous discharge from the bowel; straining, with a feeling as if the evacuation was unsatisfactory; attacks of flatulent colic; the fæces appear in detached, broken fragments. The flattened, figured stools, so often alluded to, are really not indicative of stricture, but of spasm of the sphincter, prostatic enlargement, or some tumour pressing on the intestine. It may happen that the symptoms are so trifling and unimportant as to escape unobserved until some accidental circumstance leads to a physical examination. There may be only flatulent dyspepsia. I have met with a case in which the chief distress was palpitation and derangement of the heart's action, caused by pressure of the distended colon, simulating closely morbus cordis. These facts should impress us with the important caution not to be satisfied until we have made a careful physical examination.

The early symptoms are of necessity very obscure, and are referred merely to irregularity, until the narrowing becomes decided, when we have straining and difficulty of discharge. We have already alluded to the ewer-shaped folds of muco-cutaneous tissue which indicate the presence of stricture and its position low down in the bowel.

You must be prepared to meet very opposite conditions of the bowels. I have had recently under my care two cases which show this remarkable antagonism. In the one case a gentleman was brought to me with what was thought to be uncontrollable diarrhœa; in the other there was obstinate constipation, and these conditions may be met with in different stages of the same case. When the bowels become insufficiently evacuated owing to the constriction, nature adopts a very simple process to relieve them. As in urethral stricture, the bowel above is much dilated and the fæces are thus accommodated, but acting as an irritant they cause the lining membrane to pour out mucus in large quantity, by which they are rendered fluid, and then we have diarrhœa persistent for some time, reminding us of the stillicidium urinæ in urethral stricture. We sometimes imitate nature's process by injecting large quantities of linseed mucilage or soap and water, so as to assist in liquefying the fæcal mass. And as in urethral stricture there are abnormal openings in the vicinity of the narrowing, so in rectal stricture. It is, however, remarkable that in this latter case the abnormal openings more frequently exist below rather than above the stricture—a fact which we should carefully bear in mind when dealing with fistula in ano. The obstruction may be so complete as to cause symptoms of ileus; the neighbouring organs are engaged sympathetically; the bladder and uterus may suffer. Ulceration may attack the bowel and cause hæmorrhage; the stomach becomes irritable and refuses food; the abdomen becomes tympanitic; emaciation sets in rapidly, and the unhappy victim dies prostrated by inanition

and want of sleep. Notwithstanding the constant and repeated straining true prolapse is not as frequently observed as we would be led to expect. It may occur when the straining is violent and prolonged, and the stricture low down, the entire mass being forced out and protruded at the anal opening.

Having thus delineated for you the symptoms of simple stricture, it is easy to fill in the painful characters which constitute the sad picture of the malignant form.

This brings us to the most formidable of all diseases of the rectum, *cancer*, which, consisting of an infiltration in the great majority of cases, encroaches on the canal and produces stricture. Most of the varieties of the disease have been described as affecting this part—epithelioma, malignant sarcoma, carcinoma or scirrhus, as it is so often termed, and even melanosis.

The first is most usual, the latter two are rare. Now of epithelioma we recognise three varieties, and they to a certain extent accord with the histological varieties of normal epithelium. In one the morbid growth is made up of flattened scales or tesselated epithelium, as it is termed, a form which you see so frequently at the lip, and it is a remarkable fact that the nearer the verge of the anus the more likely is the disease to present this character.

The second form presents epithelium of the columnar type, and is usually seated higher up than the last, and would appear to take its origin in some diseased condition of the follicles of Lieberkühn, which are so extensively distributed over the surface of the mucous membrane. The crypts become enlarged and extend by growth in the submucous tissue.

The third form might be compared with the spheroidal epithelium which is so frequently found in the very inmost recesses of follicles and glands. This is generally regarded as a destructive change in the last variety, whereby the cells are loaded with a mucous or jelly-like fluid, which may be discharged by rupture and collected in alveoli or spaces, constituting what is usually termed "*colloid*" cancer.

Malignant sarcoma is generally developed as a soft tumour in the alveolar tissue beside the rectum, affects young subjects, grows very rapidly, and may give rise to rather sudden obstruction. It has the characters usually assigned to soft cancer.

Contrary to the generally received opinion carcinoma, hard or scirrhus cancer, is exceedingly rare in the rectum. The term "*scirrho-contracted rectum*," employed by Sherwin in 1789, has had a wide but misleading influence regarding the pathology of the disease.

Melanosis is more interesting as a pathological curiosity than for its bearing on actual practice in clinical surgery.

In cancer of the rectum we do not find the same tendency to hereditary transmission which has been insisted on for cancer in other situations.

It is all-important to remember that the symptoms generally so pronounced and unmistakable may be completely suppressed, and that it may run its course for a considerable time without its presence being recognised either by the patient himself, by his friends, or his medical attendant. If the disease is situated high up the most prominent and distressing symptom, pain, may be completely absent. There need not be any very marked disturbance of the function of the bowels. I know of no more instructive case than the one recorded by Mr. Allingham of a gentleman who was about to be insured at ordinary rates owing to his healthy aspect and the normal state of all his organs, when the history of some bowel trouble led to an examination of the rectum, in which cancer was found to exist beyond question. The symptoms of narrowing of the intestine being present, the fact of its being caused by cancer is evidenced usually by the lancinating character as well as by the severity of the pain, by the raddle-coloured discharge, by the anxious and distressed countenance, by the anæmic leaden hue of the skin, the implication of the inguinal glands, the liver itself being frequently the seat of the morbid deposit. In all cases the diagnosis must be cleared up by a physical examination, when the finger will enter a ring peculiarly nodulated and irregular, not easy to describe, but once felt never to be forgotten (see Plate).

In the female it should be remembered that the disease frequently extends from the uterus to the rectum, and *vice versâ* cancerous ulceration may attack the posterior wall of the vagina, nature thus providing for the escape of intestinal contents. In the male ulceration may open the bladder and cause most intense agony. The fæces entering this organ occasion great irritation and subsequent inflammation, the suffering from which calls loudly for relief, frequently demanding colotomy. The pain is also intense where the fæces have to pass over an ulcerated surface of any extent.

The treatment of stricture of the rectum must be considered under three heads—dietetic, medical, and operative. The dietetic must not be too lightly esteemed; common sense would tell us that we must select for our patient food which will be easy of digestion, nutritious, and leave the smallest amount of residuum to swell the fæcal mass. Foremost among these stands milk and its derivatives, cream, koumis or fermented milk, freshly prepared meat essences, beef, mutton, chicken. You will find great difficulty in devising the requisite changes of dietary. The moderate use of stimulants is indicated by debility and the great depression of spirits. Medical treatment is chiefly concerned in keeping the evacuations liquid. Drastic purgatives must be carefully avoided, as they increase irritation and are fraught with danger. The aperient mineral waters, as Friedrichshall or Hunyadi, act very well. The compound powder of liquorice of the Prussian Pharmacopœia introduced

into our own is a mild and at the same time a very efficient laxative. Our choice in this respect is limited, as we must be careful not to upset the stomach already inclined to undue irritability. I have found succus taraxaci with the succus conii in combination act very well in such cases. Castor oil, which is much resorted to in domestic medicine, is not adapted to most stomachs, and I think its effects are likely to be followed by constipation. It is not desirable that the patient should seek to have the bowels move as often as in health, the fæces being kept under the natural amount by dietetic observances. In continued obstruction the enema of warm water and soap is most effectual in liquefying the contents of the large intestine. Anodynes are usually demanded. Belladonna has gained an undoubted reputation in alleviating the distress which these patients suffer, and should always be combined with opium whenever that drug is exhibited in such cases.

The operative treatment is either palliative or radical. Among the first we have bougies of various kinds for the purpose of effecting gradual dilatation of the narrowing, as we do in urethral stricture. Much mechanical ingenuity has been manifested in the construction of a variety of instruments for this purpose. Air, water, and metallic dilators have been for a time the fashion, and have each in turn been laid aside. I believe that everything which can be done by mechanical expansion can be accomplished by ordinary bougies sufficiently soft to be flexible and having the sizes very gradually increased. Much comfort may be obtained, and in many cases life may be prolonged, by their use, but your motto must be *arte non vi*. The greatest gentleness must be used; if they cause pain they will as a rule do mischief, and they must never be entrusted to the patient to use for himself. The frequency of the introduction must be determined by the effect which they produce. As a rule every second or third day is quite sufficient. Too great frequency causes irritation. It is also unwise to allow them to remain too long in the stricture. Ten minutes to a quarter of an hour may be taken as an average. Bougies with spiral grooves have been advocated by some surgeons with a view to applying medicaments to the part. The French surgeons use meches or rolls of linen soaked in various ointments for direct application to the diseased membrane. The frequency with which they note stricture of syphilitic origin must account for the benefit which is alleged to result from such treatment.

Tubular bougies, fitting one over another, have been advocated by Dr. Todd and Mr. Tufnell, with a view to more rapid dilatation. Instruments have been devised on the principle of Arnot's dilator for the urethra—a tube of membrana passed through and then distended with air or water. An ingenious form of this apparatus has been proposed by Ashton, and is figured in his work on "Diseases of the Rectum." Tents of prepared sponge and laminaria have also had their advocates, and even

the principle of Holt's method for urethral stricture has been applied to the rectum. Of all such rapid methods I may say that they are alike dangerous and unsatisfactory. A very little force too much may rend the peritoneum, and the sudden expansion is followed by contraction. Where you come to use bougies of large size they should be supported by a narrow stem, so that they may not cause spasm of the sphincter, which occasions much pain and prevents the instrument being retained sufficiently long in the stricture.

The surgical treatment by operation ranges from notching the mucous membrane to complete extirpation of the diseased mass, or colotomy, as a palliative in cases which are hopelessly incurable. Curling, Gosselin, and Esmarch speak favourably of "multiple incision" as an adjunct to the treatment by bougie. It can be best done by a hernia knife, slipped flatwise along the finger and then turning the edge against any projecting bands which may be felt. It must ever be borne in mind that these incisions are beset with danger, and must be carried out with extreme caution. Unquestionably in the valvular stricture of congenital origin it is the only practice which really affords any reasonable prospect of success. Almost all surgeons admit that they must be followed up by the assiduous use of bougies.

The operation of "complete longitudinal division," *external linear rectotomy*, is steadily gaining ground as a means of palliation, and even radical cure, since its introduction by Mr. G. W. Humphry, of Cambridge. Based upon the good results obtained by external urethrotomy, as advocated by Rebard and Syme, this practice has much to recommend it. A division of the intestinal wall is made from above the stricture to the anus and extended outwards so as to include the sphincter muscles. The following means have been suggested for accomplishing this object:—The elastic ligature, the ecraseur, the knife, and the actual cautery. The elastic ligature for such purpose may be, in my opinion, dismissed from consideration as horridly painful, tedious, and unsatisfactory. The knife would seem undoubtedly to carry with it the great risk of hæmorrhage, but Mr. Allingham, whose experience entitles his opinion to the highest respect, prefers this method, and entertains no fear of bleeding. The ecraseur requires a good deal of manipulative skill to pass the wire, whipcord, or chain above the stricture; but when this is done the proceeding is easy enough. Mr. Luke practised this operation long before the present ecraseur was proposed. Van Buren advocates the use of the actual cautery with Paquelin's instrument. This can be accomplished with much facility. It divides the part freely, covers the raw surface with an efficient protective glaze, and gives to the adjacent parts a wholesome stimulus to healthy action. Thus freely laying open the bowel from above the stricture gives free escape for the fæcal matter, which was pent up in it, as well as irritating discharges, and affords

almost immediate relief from many distressing symptoms. I consider the galvanic cautery by far the most efficient means of all for carrying out this operation. A tubular needle of sufficient length, and fixed in a strong handle, can be readily passed along the curve of the sacrum, guided by the finger, introduced through the stricture. Slight pressure will cause the point to enter the cavity of the intestine. A platinum wire may now be passed along the tube and caught by a ring forceps with long blades, guided along the finger, and thus conducted through the anus. Advantage may be taken of any sinus or fistulous track favourably situated for the purpose. The ends may now be fixed in the conductor, and the current turned on. As soon as it is heated moderate traction will cause the wire loop to traverse the tissues, and we can gauge with accuracy the amount to be divided. Some surgeons prefer to make the incision always in the median line, posteriorly, as the blood-vessels are smaller and fewer in number. It is said the lateral incision heals more perfectly. This operation may be in many cases substituted for lumbar colotomy, being much simpler, less dangerous, and, if the results are equally good, much more convenient to the patient.

Complete extirpation of the lower extremity of the rectum has now been performed with sufficient frequency as to rank it among the standard operations for the treatment of this disease. Three or four inches have been removed with the sphincter, and yet the fæces have been in a great measure retained.

The names of Lisfranc, Velpeau, and Recamier are found in this field of surgery. The operation, which had fallen much into disuse, chiefly owing to its performance in unsuitable cases, was revived in England by Paget, Allingham, and others. It has also been performed in most of our Dublin hospitals.

The method of performing this operation advocated by Mr. Cripps is without doubt the most satisfactory. It consists of a combination of excision and the use of the ecraseur. Maisonneuve has devised a plan for ingeniously intersecting the entire wall with loops of whipcord, which are made to cut through the bowel by the action of the ecraseur, but the proceeding is unnecessarily tedious and complicated. The bowel can be with much facility detached from its connexions posteriorly and laterally, the chief difficulty being experienced in separating it from its anterior attachment to the prostate and urethra in the male, and the vagina in the female. The bleeding, which is smart enough, although seldom to any serious extent, comes from vessels which descend in the coats of the bowel, may be controlled by pressure, while the chain of the ecraseur is being applied around the bowel, well above the disease. Some surgeons advocate connecting the divided end of the rectum with the skin, but this is found to be utterly useless, as the stitches tear away. The wound should be left perfectly free, and, by raising the patient's body, kept in

the most depending position, and frequently syringed with some antiseptic, so as to allow of the free escape of all fluids and the intestinal contents. The amount of control which patients have over the bowel after this proceeding is most marvellous.

Much of the disrepute into which such operations have fallen is due to want of care and discrimination in the selection of suitable cases. These do not average more than twenty per cent. of all the examples of rectal cancer which present themselves to the surgeon.

DISINFECTION IN ENTERIC FEVER.

In a paper by Dr. James C. Wilson, "On the importance of the thorough Disinfection of the Stools in Enteric Fever," in the April number of the *American Journal of the Medical Sciences*, he states that not only is it "possible to greatly restrict enteric fever in its prevalence, but that, as has been suggested by Flint, it is also possible in course of time to get rid of it altogether." He believes that safety lies in the thorough disinfection of the stools immediately after they have been voided. Where so much is at stake it is a matter of grave importance that the method and agent employed should be efficient. In discussing this point he quotes Koch as authority for the statement that the only certain disinfectants are chlorine, bromine, and corrosive sublimate. The result of his studies and experiments have led him to the conviction that we have in corrosive sublimate a most efficient disinfectant, which is moderate in cost, free from colour and odour, and convenient to use and rapid in its action; and to this agent he gives the preference for use in preventing the spread of enteric fever. As to the method of using, he recommends that the physician himself, to avoid accidental poisoning, take to the house of the patient two drachms of corrosive sublimate and dissolve it in a gallon of water in a large bottle or demijohn, which is to be labelled, and given into the charge of the nurse. Immediately after the bed-pan has been used, a sufficient quantity of the solution should be poured over the fæcal contents to cover them. Hard lumps, when present, should be broken up in the solution. The pan should be allowed to stand for fifteen minutes before emptying, and if emptied into a water-closet the valve must be kept open long enough to secure the thorough flushing of the trap. A small quantity of the disinfectant solution should then be poured into the basin of the water-closet and allowed to remain, and some of the same solution should also be kept in the bed-pan in the intervals of its use. The linen should be sprinkled with the same solution, and portions stained with the discharges must be thoroughly wet with it, or even allowed to soak for a time before sending it to the laundry. The clothing should also be boiled for some hours, and thoroughly rinsed before being handled by the washerwoman.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P., F.M S.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, May 19, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa		From all causes	From seven Zymotics
Dublin, -	349,685	753	847	134	224	–	3	2	1	24	28	12	126	31·5	2.6
Belfast, -	214,022	577	500	85	89	1	1	23	1	20	11	14	84	30·4	4·3
Cork, -	80,124	181	163	20	42	–	3	–	1	–	5	2	26	26·4	1·8
Limerick, -	38,562	79	85	14	31	–	–	–	1	2	1	3	8	28·7	2·4
Derry, -	29,162	87	67	5	14	–	–	2	–	–	7	2	10	29·9	4·9
Waterford,	22,457	53	52	9	20	–	–	–	–	–	3	–	3	30·1	1·7
Galway, -	15,471	30	19	2	11	–	–	–	–	–	3	–	–	16·0	2·5
Newry, -	14,808	35	23	5	8	–	3	–	–	–	–	–	2	20·2	2·6

Remarks.

With the advancing spring we notice a lessening death-rate. In many of the towns, however, it was still very high—notably in Dublin, Belfast, Waterford, and Derry. In the sixteen chief town districts of Ireland the registered deaths represented a rate of mortality of 29·1 per 1,000 of the population annually. The corresponding rate in twenty-eight large English towns was 22·1. Among these towns is included London, in which it was 20·9. In Edinburgh the death-rate was only 17·7; in Glasgow it was as high as 33·0. Deducting the deaths (23) of persons admitted into public institutions from localities outside the district, the death-rate of the Dublin Registration District becomes 30·6, while that within the municipal boundary of the city becomes 33·3.

Acute febrile zymotic affections caused a mortality of 4·9 per 1,000 per annum in Derry, 4·3 in Belfast, and 2·6 in Dublin.

In the Dublin Registration District the births of 753 children and the deaths of 847 persons were recorded. The births were 134 fewer and the deaths were 180 fewer than in the previous four weeks. One hundred and thirty-four children under one year old died, besides 224 individuals aged 60 years or upwards.

Febrile zymotic diseases caused 79 deaths, compared with an average

of 117·0 deaths in the corresponding period of the preceding ten years, and with 118 in the previous four weeks. The most fatal of this class of maladies were again fever (28 deaths) and whooping-cough (24 deaths). In the case of both a decided decline in the mortality is observed. Of the 24 victims of whooping-cough, 20 were children under five years of age, including 11 infants of less than twelve months. The "fever" deaths declined from 42 to 28; of these 18 were referred to typhus, 5 to typhoid, and 5 to fever of ill-defined type. In Belfast one death from smallpox was registered, and the epidemics of scarlet fever and whooping-cough continue, but with diminished severity. The outbreak of measles in Newry has subsided as quickly as it sprang up.

Pulmonary phthisis was again very fatal in Dublin, Belfast, and Cork. The deaths were 126 against 139 in the preceding four weeks in Dublin, 84 against 86 in Belfast, and 26 against 27 in Cork. Respiratory affections caused 175 deaths in Dublin, compared with 264 in the previous period and with a ten-years' average of 151·9. The deaths included 121 from bronchitis (average = 99·2) and 50 from pneumonia (average = 28·8). The continued fatality of pneumonia is a distinguishing feature of the vital statistics of the present season.

On Saturday, May 19, there were under treatment in the principal Dublin hospitals no cases of smallpox, 9 cases of measles, 18 of scarlet fever, 66 of typhus, 6 of typhoid fever, and 15 of pneumonia.

The mean temperature of the period under discussion was 48·0° in Dublin, 45·2° at Belfast, 47·1° at Cork, 48·9° at Greenwich, 45·8° at Glasgow, and 45·4° in Edinburgh. These values are all considerably deficient.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, June 16, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa		From all causes	From seven Zymotics
Dublin,	349,685	894	744	104	183	-	5	1	3	31	25	5	120	27·7	2·6
Belfast,	214,022	505	441	73	49	4	2	30	1	22	10	6	84	26·8	4·6
Cork,	80,124	186	118	13	28	-	-	-	-	1	4	1	23	19·2	1·0
Limerick,	38,562	62	72	10	16	-	-	-	-	3	1	1	14	24·3	1·7
Derry,	29,162	63	48	5	14	-	-	2	-	-	-	3	7	21·4	2·2
Waterford,	22,457	54	39	8	12	-	-	-	-	-	2	-	8	22·6	1·2
Galway,	15,471	26	18	3	7	-	-	-	-	-	2	1	1	15·1	2·6
Newry,	14,808	33	17	1	6	-	4	-	-	-	-	1	2	14·9	4·4

Remarks.

A general decline of the death-rate is again observable. Nevertheless, it was still high in Dublin and Belfast. It was 24·7 per 1,000 of the population annually in the sixteen chief town districts of Ireland, 19·7 in twenty-eight large English towns (including London, in which it was only 18·5), 19·3 in Edinburgh, and as high as 31·3 in Glasgow. Omitting the deaths (20 in number) of persons admitted into public institutions from localities outside the registration district, the death-rate of the Dublin metropolitan area becomes 26·9, and that of the municipal area becomes 29·3.

The mortality caused by febrile zymotic diseases represented a death-rate of 4·6 per 1,000 per annum in Belfast, 4·4 in Newry, and 2·6 in Dublin.

In the Dublin Registration District 894 births and 744 deaths were registered. The births were 141 in excess of those recorded in the preceding four weeks, while the deaths fell short of those in the same period by 103. Of children under one year 104 died, and of persons aged 60 years and upwards 183 died. In both extremes of life the mortality showed a decided falling off.

In the Dublin district 77 deaths were attributed to febrile zymotic diseases, compared with a ten-years' average of 114·2 deaths in the corresponding period. The 77 deaths included 5 from measles, 3 from diphtheria, 31 from whooping-cough, and 25 from "fever" in the generic sense. Among the 31 victims of whooping-cough were 28 children under five years of age, and this number again included 12 infants of less than a year old. Of the 25 victims of fever, 11 succumbed to typhus and 7 to enteric fever. In the remaining 7 cases the type of the disease was ill-defined or not determined. In Belfast as many as 4 deaths from smallpox were recorded, and scarlet-fever and whooping-cough showed a somewhat increased fatality. In Newry there were 4 deaths from measles. The deaths from diarrhœal affections, including dysentery, were not numerous in any of the towns.

Pulmonary consumption was once more very destructive to life, slaying 254 individuals in the eight towns included in the Table. Diseases of the organs of respiration killed 143 persons in Dublin, against an average of 136·5 in the corresponding period of the previous 10 years. In this number are included 85 deaths from bronchitis (average=88·5), and 39 from pneumonia (average=27·4).

On Saturday, June 16, there were under treatment in the principal Dublin hospitals no cases of smallpox, 3 cases of measles, 18 of scarlet fever, 38 of typhus, 5 of typhoid fever, and 17 of pneumonia.

The mean temperature of the period under discussion was 56·2° in Dublin, 53·0° at Belfast, 55·0° at Cork, 58·1° at Greenwich, 53·3° at

Glasgow, and 53·1° in Edinburgh. These values are either equal to, or somewhat in excess of, the average mean temperatures of the period under discussion.

METEOROLOGY.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of May,* 1883.

Mean Height of Barometer, - - -	29·967 inches.
Maximal Height of Barometer (on 17th, at 9 p.m.),-	30·439 „
Minimal Height of Barometer (on 8th, at 9 p.m., and on 12th at 9 a.m.), - - - -	29·546 „
Mean Dry-bulb Temperature, - - -	51·7°.
Mean Wet-bulb Temperature, - - -	47·7°.
Mean Dew-point Temperature, - - -	43·5°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·284 inch.
Mean Humidity, - - - - -	73·8 per cent.
Highest Temperature in Shade (on 23rd), - -	68·8°.
Lowest Temperature in Shade (on 11th), - -	35·4°.
Lowest Temperature on Grass (Radiation) (on 11th),	33·8°.
Mean Amount of Cloud, - - - -	61·3 per cent.
Rainfall (on 13 days), - - - -	2·023 inches.
Greatest Daily Rainfall (on 8th), - - -	1·387 „
General Directions of Wind, - - -	N.E., S.W.

Remarks.

Although a spell of severe cold for the time of year occurred early in the month, May, 1883, may be considered to have been favourable from every point of view. There was an average mean temperature and rainfall, while the rainy days (13) fell slightly short of the average (15). At the beginning of the month atmospherical pressure was steadily highest to the N.W. of the British Islands, over which and Western Europe generally gradients for N.E. winds existed. Temperature was consequently low, and showers of cold rain, sleet, and hail were reported from many stations on the 3rd and two following days. On the 6th a depression appeared in the Gulf of Genoa, whence it travelled across France to England, being joined on the morning of the 7th by another disturbance, which had advanced to St. George's Channel from the Atlantic. Thus very unfavourable weather was produced in England, and particularly in Ireland. Near Dublin brilliant sunshine, with a freshening N.E. wind, prevailed on the 7th. Towards evening a canopy of cirrus and cirro-stratus overspread the sky *from S.E.* as an area of low pressure approached from that point. After 9 p.m. rain set in, and continued to fall in Dublin for 38 hours consecutively, yielding 1·797 inches of water. Tuesday, the 8th, was most inclement—the temper-

ature, which did not rise above 42·6°, sank to 36·9° at 5 p.m., when sleet and large flakes of snow were seen intermingled with the rain. In the evening it blew a moderate gale from N.E. At 8 a.m. of the 9th the distribution of both pressure and temperature over Western Europe was most anomalous—the thermometer stood at 50° at Haparanda, on the Gulf of Bothnia (lat. 67° N.), while it was only 39° at Valencia in Kerry. On this morning several inches of snow were on the ground in central Ireland. When the weather cleared, the Dublin and Wicklow Mountains were seen deeply covered with snow. The next two days were cold, but generally fair. At noon on Friday, the 11th, the air was so pellucid that the snow-clad Mourne Mountains and the Carnarvonshire Mountains, also covered with snow, were clearly seen from Killiney Hill. On the 12th the weather underwent a sudden and complete change—S.W. winds prevailed, and temperature rose about 10°. In consequence of this the mean temperature of the week ending on this day was not lower than 46·1°, a figure which was, however, at least 5° below the average.

The weather now became exceedingly fine. There was a decided increase of warmth and a succession of bright sunny days was experienced. On the 16th the thermometer rose in central England to 70°–75°, and in France to 81°–88°. From the 15th to the 22nd conditions were anticyclonic in Ireland and England, and, as is usual in May, the high pressure system was accompanied with bright beautiful weather. On the 23rd this system moved southwards to France, while a series of depressions began to pass towards E. or N.E. over the N. of Scotland to Norway. The 24th and 25th were dull days in Dublin, but on the former day the thermometer rose to 77° at Loughborough, 78° at Cambridge, 79° in the south of London, and 81° at Greenwich. On the same day a sea fog kept down the temperature at Dover so remarkably that the highest reading of the thermometer was only 55°, or 24° lower than in London. On the 26th there was a beautiful sunset in Dublin. From this date to the end of the month fresh S.W. winds, and cloudy, changeable or showery weather prevailed.

In Dublin lightning was seen on the night of the 5th; solar halos appeared on the 4th, 18th, and 22nd; sleet and snow fell on the 8th, hail on the 3rd, 4th, and 5th. The atmosphere was foggy on the 16th, 17th, and 22nd. A thick vapour fog occurred on the morning of the 16th.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

FATTY HYPERTROPHIC CIRRHOSIS.

It seems we are to add yet another to the long list of diseases that may attack the liver. We gather from an article in the *Progrès Médical* (No. 9, 1883) that henceforth we must consider fatty hypertrophic cirrhosis to be distinct from any of the forms of cirrhosis hitherto described. Let us very briefly see what are the characters which thus separate it from the other forms. The liver is very large, being so altered in its transverse and vertical diameters as to appear more cuboid in shape than usual; it has, moreover, a pasty feel and yellowish colour; its surface is smooth; Glisson's capsule may be thickened in places, and its prolongations can be traced with the naked eye into the substance of the liver. On section the liver seems to be composed of fatty nodules, varying in size, more or less circular, and almost always completely surrounded by connective tissue. In some places the increase of connective tissue is enormous. Under the microscope the various lobules can be seen to be quite distinct; in their midst are the hepatic cells, separated by, and dotted about amongst, the large fat cells. These fat cells are nothing less than the ordinary hepatic cells enormously distended with oil globules. The essential feature of the lesion is that between these groups of fat cells there is always found to be a layer of young connective tissue. The overgrowth of connective tissue commences in the portal spaces, spreading thence between the lobules; it extends always to the sublobular veins, and sometimes surrounds the minute bile-ducts, producing an apparent resemblance to the ordinary hypertrophic cirrhosis. The symptoms of this affection in an early stage present nothing characteristic; pain and weight in the epigastrum, anorexia, nausea, occasional vomiting are the more common ones. The second stage usually commences rather abruptly; very often there is fever, œdema of the limbs or face, a sense of great oppression, or profuse sweats; these may all make their appearance at the same time. Sometimes there is subacute peritonitis or slight icterus and cough with blood-stained sputa. On examination of the abdomen, the liver will be found to be enlarged; or, if it cannot be made out, there will be an unusual degree of fulness in the epigastrum and a slight amount of ascites. Signs of pulmonary phthisis will generally be present. This second period does not usually last more than four or five weeks. There may be deceptive remissions,

but the ultimate result is always the same; and the patient dies sometimes of his phthisis, sometimes from cachexia, and sometimes with the symptoms of icterus gravis. There are two points to be borne in mind in the consideration of the ætiology of this disease—viz.: (1) the patients are invariably alcoholic; and (2) they are nearly always tuberculous. The prognosis is most unfavourable, and no particular line of treatment is recommended.—*Med. Times and Gazette.*

TREATMENT OF OZÆNA.

BICHLORIDE of mercury, in a solution of one grain to the pint of water, to which two ounces of cherry laurel water may be added, is recommended by Dr. J. N. Mackenzie (*Maryland Medical Journal*) in the treatment of inflammatory condition of the nose and throat with profuse muco-purulent secretion. Crusts that may be present and tenacious mucus should be removed from the surfaces, which should then be sprayed with an atomiser provided with suitable tubes. He regards it as a most valuable disinfectant in ozæna and fœtor of the breath from pharyngeal disease. He has found it successful in his own case in abating an acute coryza, and has had good results in treating chronic nasal catarrh.—*St. Louis Courier of Med.*, May, 1883.

IODINE AS A STOMACHIC SEDATIVE.

DR. T. T. GAUNT has for a number of years been employing the compound tincture of iodine[a] in drop doses in nearly all forms of emesis, and reports thirteen cases of the most varied character, in all of which vomiting was promptly arrested by the use of this drug. The employment of iodine for the relief of the vomiting of pregnancy has been somewhat in vogue for a number of years; and while the success attending its use has been pointed out with more or less enthusiasm its exact value has never been established.—*Am. Jour. of Med. Sci.*, April,

CAPSICUM AS AN EXTERNAL APPLICATION.

J. A. E. STUART recommends the use of capsicum as a rubefacient application in lumbago and strains of the muscles of the back. He uses the following formula:—℞. Tr. capsici, ℥i.; Ol. olivæ, ad. ℥vi. M. Sig. Liniment to be rubbed in frequently.—*St. Louis Courier of Med.*, May, 1883.

[a] The compound tincture of iodine is omitted from the last edition of the U. S. Pharmacopœia. It corresponds with the Tinctura Iodi, B. P., but contains more iodide of potassium.—ED. PERISCOPE.

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AUGUST 1, 1883.

PART I.

ORIGINAL COMMUNICATIONS.

ART. IV.—*Asiatic Cholera and its Invasions of Europe.* By CHARLES A. CAMERON, M.D.; S.Sc.C., Camb.; M.K. & Q.C.P.; F.I.C.; Chairman of Public Health Section, Academy of Medicine; Vice-President, Society of Public Analysts of Great Britain; Hon. Member, Societies of Hygiene, Paris, Bordeaux, &c.; Member of Council and Professor of Hygiene and Chemistry, R.C.S.I.; Medical Officer of Health for Dublin, &c.

THE outbreak of cholera in Egypt has brought once more this formidable disease prominently before the public. The present is, therefore, an opportune time to review the history of Asiatic cholera, especially in relation to its invasions of Europe. It will be seen by the perusal of the following pages that whilst cholera has only invaded the United Kingdom four times, it has more than a dozen times appeared upon the Continent of Europe, and has very frequently extended into various parts of Asia and Africa from its *fons et origo* in the plains of India.

The term cholera occurs in the writings of Hippocrates. The etymology of the word is doubtful. It may be derived either from *χολέρα*, a gutter or water spout, or from *χολή*, bile. If the latter etymology be correct, then the disease described by Hippocrates, Galen, Celsus, and other classical writers on medicine, was probably the disease now known as European cholera (*cholera nostras*), for while bile is absent from the evacuations in Asiatic cholera, it is usually present in those of European cholera.

The Arabian physicians of the middle ages, and Continental

and British writers of the sixteenth and seventeenth centuries, have described epidemics which may have been Asiatic cholera. Two epidemics of "cholera" in England in the latter half of the seventeenth century have been described by Sydenham.

Cholera has probably existed in India since the appearance of man in that country. The earliest writers refer to the disease. Susruta, an author who lived before the Christian era, has left on record a minute account of the symptoms of the disease. Whangshooho, a Chinese author who flourished 400 years before the Christian era, has described it as well known in his country.

The earliest account of cholera, as observed in India by Europeans, is that given by Gaspar Correa. He states that in 1503 20,000 men of the army of the sovereign of Calicut died from a disease which killed its victims within eight hours. He observed the same complaint in 1543. It was a very swift disease, and but few whom it attacked survived.

DIFFUSION OF CHOLERA.

During the last 250 years several widespread epidemics of cholera have occurred in India, and have been described by various authors.

In 1768–71 the disease raged in the French possessions, and, according to Sonnerat, carried off 60,000 persons.

In August, 1817, Dr. Robert Tytler, of Jessore, was called upon to attend a native suffering from symptoms resembling those caused by an irritant poison, and to which cause Dr. Tytler was disposed to assign the speedy death of the patient, when he learned that seventeen other persons were similarly affected. These were amongst the earliest of the cases of the great epidemic of cholera which soon spread over the greater portion of India, and subsequently penetrated to Persia and other adjacent countries. In a short time a large number of British and native soldiers were stricken with the disease, and the camp of the Governor-General, the Marquis of Hastings, at Bundelcund, was converted into a vast hospital (Corbyn's "Treatise on Epidemic Cholera," Calcutta, 1832). This epidemic lasted four years.

In the year 1826 cholera reappeared in many parts of India, and almost immediately invaded Arabia, Tartary, and Persia. It extended from Khiva towards Asiatic Russia, and on the 26th of August, 1829, it appeared in Orenburg, a town on the eastern frontier of European Russia. From the history of the progress of cholera from India in a north-western direction we gather that the

contagion was propagated into Russia both from the northern provinces of Persia and from Tartary. The progress of cholera through Russia was apparently checked by the winter, but in the spring it pushed onwards rapidly, reached Warsaw in April, and soon afterwards attacked Riga, a Baltic town. In June it appeared in St. Petersburg, and, passing through Finland, it reached Sweden in August. The Austrian empire suffered severely. The disease appeared in Pesth in July, but earlier in the month it had spread throughout many parts of Bulgaria, and somewhat earlier still it had broken out in Constantinople. The province of Gallicia had the highest mortality from the epidemic; it was computed that 261,000 persons were attacked, of whom 97,770 died. In August Vienna and Berlin were affected, and the disease appeared in various parts of Prussia and other German states, though some of them, notably Bavaria, Saxony, and the Mecklenburgs, escaped the visitation. France, Spain, and Portugal, were spared in 1831.

The advent of cholera into the British Islands took place in August, 1831. The places first attacked were Team, a village near Gateshead, and the town of Sunderland; in the latter place it became epidemic in October. It subsequently appeared in many of the towns on the east coast, and reached London and Edinburgh in February, 1832; its progress had, no doubt, been retarded by the winter. In February the disease made its appearance in Glasgow. In March it broke out in Dublin, and the following month it appeared in Cork. The deaths were very numerous. In London nearly 6,000 perished, and in Dublin 5,632. In Great Britain the deaths up to the end of the year were returned to the Board of Health as amounting to 31,376, which is believed to be under the actual figures. In Ireland up to 1st March, 1833, the deaths numbered 21,171. Many of the towns suffered severely; in Ennis one-tenth of the inhabitants were attacked.

In March, 1832, cholera penetrated to France. In Paris it assumed a most malignant form; the rate of mortality was very high, and nearly 20,000 perished. In that year cholera reappeared in England, and carried off about 15,000 persons.

The emigrant ship "Carricks," which left Dublin in April, 1832, for Quebec, is believed to have imported cholera into America. During the voyage 42 of the passengers died from cholera; and shortly after the arrival of the vessel in port cases of the disease began to appear. Before the end of the year the malady was epidemic throughout Canada and the United States.

In 1833 cholera invaded Portugal, and shortly afterwards passed into Spain. It is stated that the contagion was first introduced into the Iberian peninsula by the merchant steamer "London," which had cholera on board during the voyage from London to Oporto, and landed troops at that port. In this year cholera, generally of a comparatively mild form, appeared in a great many parts of Europe and America. In 1834 very few cases occurred in Europe; but in the following year it became epidemic in the south of France. In 1836–7 Italy suffered cruelly from it; in Rome about 10,000 persons were attacked. The disease reappeared in Prussia in 1837; and in the same year it ravaged Northern Africa and Malta. In the latter place more than 4,000 persons died. In 1838 cholera caused but few deaths in Europe, and in the following year it completely disappeared.

In 1841–4 cholera was diffused through many parts of India and the adjacent countries. By the autumn of 1846 it had advanced north-westwards, to Bagdad and Damascus. In November it appeared at Mecca, where it caused the deaths of about 15,000 pilgrims. Early in 1847 it extended to Tartary and Persia, and spreading along the coast of the Caspian sea reached Trebizonde. By the autumn it had appeared at Taganrog—entering Europe, as it had done in 1829, by the Province of Orenburg—and had nearly reached Moscow when apparently the winter arrested its progress.

In the spring of 1848 cholera spread rapidly over a large portion of Russia, the Danubian Principalities, Scandinavia, and parts of Northern and Eastern Germany, and of Southern Austria. It broke out in London in September, in Edinburgh during the following month, and in Belfast in December.

In October, 1848, cholera broke out in England, and in the following year raged throughout Great Britain and Ireland. In London the pestilence carried off more than 14,000 persons. In England and Wales 53,273 deaths were caused by it. Ireland suffered severely; in Dublin alone 1,664 deaths occurred. The disease appeared in France; in Paris, out of 33,274 attacked by the disease, 15,677 succumbed. In this year and the one following many towns in North America had epidemic cholera. The deaths from cholera registered in England and Wales in 1850 were 887; in 1851, 1,132; in 1852, 1,381. The disease was not widely spread throughout Europe.

From 1849 to 1852 cholera was widely spread throughout India, and burst out from that country in several directions. It

appeared in Persia, Asiatic Turkey, and Asiatic Russia; and in 1853 the malady was epidemic throughout European Russia. The disease imported in former years had not, however, died out; for in 1852 Poland was heavily visited by this plague.

A large portion of Europe had cholera in 1853–4. France was one of the heaviest sufferers, having lost, according to Dr. M. Barth, 140,000 of its inhabitants. Southern Europe, from Portugal to Turkey, was harassed with this scourge. In Naples 10,000 corpses were the mute witnesses of the destroying power of the modern plague. In Sardinia 24,000 persons perished. In Russia 100,000 died in 1853, and 14,000 in 1854. The allied troops at Varna and the hostile forces contending in the Crimea sustained large losses from cholera. In these years the disease visited North America and the West Indies.

In October, 1853, England was for the third time seriously invaded by cholera. Newcastle-upon-Tyne suffered very severely, losing 1,922 of its citizens, whilst the total deaths in England and Wales numbered only 4,419. In 1854 the deaths in England and Wales amounted to 20,097, half of which occurred in London.

In 1855 the deaths caused by cholera in England and Wales were set down at 837, and in the following year 762. During the years 1857–1864 the deaths ascribed to this disease varied from 1,150 in 1857, to 327 in 1860.

In 1855 the cholera epidemic reached a fearful *crescendo*. According to Drasche, 666,814 persons were attacked, of whom 270,915 died. In Russia in Europe 131,327 persons died from cholera in 1855.

During the great epidemic of cholera of 1852–5 nearly 1,100,000 persons were killed by this scourge in Europe alone. Enormous as this mortality from a single disease is, it is small compared with the cholera death-rate in India. In 1877, 357,430 persons died from cholera in the Presidency of Madras (Report of Surgeon-Major W. R. Cornish, Sanitary Commissioner, Madras, 1878).

In 1861 cholera continued in Russia, in the Iberian peninsula, and in a few parts of the United Kingdom, France, and Germany. It prevailed in Mexico and South America, and it was introduced by coolies into the Mauritius. But few places in Europe were affected with cholera in 1857–8, but in the following year it became locally epidemic in some points in Northern Germany, Finland, Sweden, and Spain. From 1861 to 1864, inclusive, cholera was practically absent from Europe.

On the 28th February, 1865, the British ship, "North Wind," landed a large number of pilgrims, chiefly Javanese, in Jidda, and a week later the "Persia" brought another consignment, *en route* for Mecca. Both vessels had touched at Makallah, where water of very bad quality was shipped on board. Shortly after leaving this port cholera broke out, and carried off 52 out of a total of 632 of the crew and passengers of the "North Wind," and 93 out of the 530 persons on board the "Persia." The first victims on board the "Persia" were passengers from Makallah, 70 of whom had come from Hadramant, in Arabia, where cholera was prevalent. The epidemic of cholera which ensued at Mecca and its neighbourhood was of the worst type. About 15,000 out of 90,000 pilgrims are computed to have perished, most of whom died within a week. In May a steamer carried 1,500 pilgrims from Jidda to Suez, and immediately after cholera appeared in Egypt. The pilgrims, who returned from Mecca to various parts of the Turkish Empire in Asia and Europe, carried contagion with them. Late in June the disease reached Constantinople (where it caused 50,000 deaths), and early in July, Beyrout, Jaffa, Cyprus, and other places.

Cholera made its entry into Europe on the 18th June; the place first attacked was Marseilles. It effected a lodgment in Italy on the 7th July, and the following day appeared in Spain. Gibraltar was attacked on the 18th, and several parts of Southern Russia were affected later in the month. The disease appeared at Brahilov, on the Danube, 31st July, and soon spread throughout Roumania. In all these cases no difficulty was found in tracing the contagion to persons who had come from infected places.

On the 27th August cholera suddenly made its appearance in the very centre of Europe—namely, at Altenburg, in Saxony. It was, however, discovered that the first victim was a woman who had left Odessa after the disease had been imported into that town, and whose child had been ill with diarrhœa since they had left Odessa. Dr. Rudolf Günther[a] states that the infection brought by this woman extended the disease to 25 localities, and caused nearly 500 deaths.

A few cases of cholera occurred in England in September, but the origin of them was not ascertained, and they did not spread. The disease appeared in epidemic form at Southampton. A woman died from it on the 24th September, and, within three weeks, 60

[a] Die indische Cholera in Sachsen im Jahre 1865. Leipzig.

cases of the malady occurred. Professor Parkes investigated the outbreak, but was only able to discover that the persons first attacked were more liable, from their occupations, to contagion introduced from the port into the town, but he was not able to connect it with any particular ships. At that time, however, Alexandria was infected, and the ships which plied between that port and Southampton, no doubt, introduced the cholera contagion into the latter.

During the winter of 1865–6 cholera was almost quiescent, except in Southern Russia; but it awoke with vigour early in 1866. It appeared at Bristol in April, at Liverpool in May, at Southampton and Sunderland in June, and in London in July. The Liverpool outbreak was traced to Rotterdam, and it was considered that the contagion was introduced into other seaports from Dutch and Belgian towns. In Southampton the disease appears clearly to have been imported by the crew of the "Poonah," from Alexandria, as cholera was actually on board the vessel when she entered the harbour.

The first case of cholera in Ireland, in 1866, occurred on the 26th July in Dublin. The victim was a girl who had arrived that day from Liverpool, where the disease was epidemic. The malady immediately spread, and before the end of the year had carried off 923 persons. In this year a great many parts of the United Kingdom were cruelly ravaged by cholera. The deaths which it caused were—in England, 14,378; in Ireland, 2,501; and in Scotland, 1,270 = 18,149.

In 1866 cholera caused 20,000 deaths in Italy, 33,000 in Belgium, 20,000 in Holland, 115,000 in Prussia, 4,500 in Sweden, in Austro-Hungary 235,000 (this estimate is probably an exaggerated one), in Poland 18,000, in Russia 73,000, in Saxony 6,000, in Roumania, 29,000. No returns of the deaths in France have been published. In Paris, in 1866, 5,509 persons died from the disease. In Denmark and Norway the mortality from cholera was trifling. Portugal suffered but slightly. As to Spain, no statistics or reference to the deaths caused by cholera have been published; but some Spanish towns were ravaged by the disease.

In 1868 cholera continued in Prussia, but did not do so much damage as in the previous year. It ravaged Italy, the deaths from it amounting to 128,000. The disease prevailed, but not largely, in France, Spain, and Switzerland. In Holland it caused 1,500 deaths. It was somewhat severely felt in Poland and parts

of Russia, and the north-western parts of European Turkey. In Austro-Hungary it was comparatively infrequent in its attacks. The Prussian armies suffered from it during the Austro-Prussian war.

In 1866 cholera appeared in only two points in Russia, and one in Germany. The disease appeared to have died out. It, however, made its appearance at Kiev in 1869, and spread over several districts, causing only between 600 and 700 deaths. In the following year it diffused over a wider area, and penetrated to Poland. This year the deaths from cholera in Russia amounted to 9,910.[a]

In 1871 nearly 5,000 deaths from cholera were recorded in Russia. The disease was severely felt in Austro-Hungary, especially in Hungary, where—out of a population of 8,675,517—443,641 were attacked (of whom 187,407 died), from September, 1872, till the end of 1873. In Austria more than 100,000 persons perished in 1872–3.

In 1871 and 1872 cholera was somewhat widely spread throughout Prussia; the deaths which it caused were under 4,000. There were not many cases in this kingdom in 1872; but in 1873, 23,242 persons succumbed to the epidemic. In this year cholera spread over the greater part of Germany, and appeared in France, Belgium, Holland, and Scandinavia. Denmark and Norway had but few cases. In 1874 cholera died out in Europe.

During the latter years of the last European epidemic of cholera cases now and then occurred in England, but the disease never assumed the proportions of an epidemic. The great waves of cholera which moved out of India in 1865, extended (renewed, perhaps, occasionally from the fountain-heads of the pestiferous streams in India) over a large portion of the world. The disease devastated Northern and Eastern Africa, and extended inland so far as the Victoria Nyanza Lake. It attacked the armies of King Theodore of Abyssinia. It ravaged Nubia, Somali, Arabia, Syria, Persia, Afghanistan, Turkistan, Kurdistan, Armenia, and Asiatic Russia. In 1873 a vessel from Stettin introduced cholera into Halifax. About the same time cholera was prevalent at New Orleans and in the basin of the Mississippi.

Since the first appearance of cholera in Europe, in 1831, it has spared some places altogether, and repeatedly visited others. For example, there have been no fewer than thirteen distinct epidemics

[a] J. Netten Radcliffe in "Reports of Medical Officer of the Privy Council" for 1875, p. 142. Mr. Radcliffe's paper details the spread of the last epidemic of cholera throughout the world.

of this disease in Stettin. It is stated that the disease is most virulent in low-lying situations—and this as a rule appears to be the case—but, according to Dr. Blane, the disease in 1866 decimated the army of King Theodore at a height of several thousand feet above Lake Tzana ("Story of the Captives").

SYMPTOMS AND DIAGNOSIS.

Malaise is very frequently indeed the precursor of an attack of cholera, while diarrhœa, attended with but little pain, is generally the earliest symptom noticed; it may continue without other symptoms for several days, or be immediately followed by severe disturbance of the system. The alvine evacuation is thin, light yellow, or brown, and alkaline. It is characteristic of the disease, and from its appearance is termed "rice water" evacuation. The patient soon becomes pale, and his face wears an anxious expression. His tongue is white and clammy. Nausea is early felt, and is often followed by vomiting, which sometimes becomes mere regurgitation of everything swallowed. In some instances the symptoms are not more severe than these, and were it not that cholera was epidemic, would be regarded as those of cholera morbus, or even simple gastric derangement. During epidemics of cholera, diarrhœa, however simple and painless, should be promptly checked, as it has a tendency to run into cholera.

In the second stage of the disease the diarrhœa suddenly increases, vomiting becomes frequent and severe, there is intense thirst; and severe cramps of the muscles, expecially those of the extremities, are experienced. There is great restlessness and sleeplessness. A burning sensation is felt in the stomach, and the patient often complains of heat, though his temperature is below the normal point.

It is somewhat remarkable that the discharges from the bowels and from the stomach are so often attended with little or no pain; they require no effort on the part of the patient, and appear to be accomplished, as it were, automatically.

The temperature falls in severe cases to 95° F. (35° C.), or 94° F. (34·4° C.), whilst the pulse rises to from 100 to 112 beats per minute. The respiration in the graver cases is hurried and shallow, and occasionally there is dyspnœa. The face becomes shrunken and livid, and the skin over the hands wrinkles. The voice sinks into a hoarse whisper (*vox cholerica.*)

In the third stage the symptoms become more urgent; the

surface temperature falls; the face becomes cyanotic; the patient is more or less stupefied. This stage may last from two to twenty-four hours, and most frequently terminates in death.

The fourth stage of cholera is characterised by the almost complete absence of purging or vomiting; the patient often becomes comatose; the skin is clammy and cold; the face acquires a purple or dark blue hue; the eyes are dry and shrunken; the pulse is no longer to be felt at the wrists.

In the fifth stage, should the patient reach it, the temperature rises, the pulsation is lowered; the evacuations resemble typhoid stools; the urine is secreted; the appearance of the face and skin rapidly improves, and in a day or two the patient enters the stage of convalescence.

Occasionally persons are carried off by cholera within a few hours, and without having suffered from diarrhœa or vomiting. This form of the disease is termed *cholera sicca;* but Lebert considers that *cholera siderans* is a more appropriate term for it.

The characteristic symptoms of cholera are as follow:—The absence of fever, the want of warmth in the air expired from the lungs, suppression of urine, the vomiting, the "rice water" evacuations, the low temperature of the body, the cramps, the livid skin, the collapse, and, lastly, the rapid course of the disease.

Cholera nostras, *Cholera morbus*, or European cholera, resembles Asiatic cholera, and is liable to be confounded with the latter when it is epidemic. It comes on suddenly with vomiting and diarrhœa; the abdomen is often painful and distended, the evacuations rarely resemble the "rice water" discharges of Asiatic cholera. The absence of premonitory diarrhœa, and the comparative mildness of the symptoms, suffice in the great majority of the cases to discriminate it from its more formidable Asiatic namesake.

ÆTIOLOGY OF CHOLERA.

Endemic in India.—There is strong proof adduced by Dr. C. Macnamara, in his valuable work on Cholera (London, Churchill, 1870), that cholera is endemic not only in the valley of the Ganges but also throughout a large portion of the Presidency of Bombay and Madras, and that it is probably endemic in nearly all the Indian seaboard cities. The strongholds of the disease are the cities of Dacca and Calcutta. The disease declines north-west from an imaginary line drawn north-east through Saugor, Allahabad, and Gorruckpore, to the foot of the

Himalayas, and increases to the eastward of this line. It is not endemic in the Puñjâb, Rajputana, or Sinde. The evidence collected by the Cholera Congress at Constantinople appears to prove that cholera is not endemic in Persia or Arabia; nor does it appear to have an abiding place in China or Central Asia. It is not likely, therefore, that it is endemic anywhere out of India.

Transit of Cholera.—Cholera has rarely appeared in any part of the world distant from India without having made its presence felt in the intervening regions. No doubt in two or three instances the disease has broken out under circumstances which appeared to indicate a sporadic origin; but in nearly all those very exceptional cases it was not found impossible to account for its occurrence. An outbreak happened in Syria in 1875, at a time when the nearest point at which cholera existed was Western India; how the disease was introduced was not ascertained. In 1873 cholera appeared, apparently sporadically, in New Orleans. Inquiries were made, the results of which appeared to show that no ship from a cholera-infected port or country had come into New Orleans that year. Subsequent investigations, undertaken by a Commission appointed by the United States Government, led to the conclusion that quarantine regulations were so lax that it was quite possible for a ship to have been admitted with cholera virus on board.

It would not be difficult to trace every extensive outbreak of cholera which occurred during the epidemics of the present century in Great Britain and Ireland to contagion imported from abroad. All the local outbreaks in Ireland during the epidemic of 1849 were traced to three English *foci*—namely, Liverpool, Sheffield, and Cardiff. I have shown that in 1830–2 a chain of cholera links connected Scandinavia with India. A careful study of the history of cholera epidemics must convince every unprejudiced inquirer that India is the native *habitat* of cholera, and that it never originates in any other country. It will be seen, too, that the disease has never travelled from the East faster than man has travelled.

Is Cholera Contagious?—The question—Is cholera contagious? has been debated with much warmth. In 1832 the directly contagious character of the malady was all but universally admitted. In 1849 the majority of physicians held that cholera was not propagated from person to person. During both epidemics not a few writers maintained that the disease was caused by an abnormal alteration in the constitution of the air due to the occurrence of

"pandemic waves" in the atmosphere. At present the most eminent epidemiologists class cholera with the miasmatic contagious diseases. It is not, as a rule, directly contagious in the same way that smallpox or scarlatina is, but matter ejected from the bowels of a cholera patient is capable of producing the disease if taken into the body of a healthy person. In short, cholera is propagated from person to person in the same indirect manner that typhoid fever is communicated. As, however, typhoid fever appears to be occasionally, though rarely, propagated direct from person to person, so cholera may in like manner be transmitted from the sick to the sound.

Pettenkofer's Theory.—This eminent authority considers that the virus of cholera is an organised substance, produced in the soil of regions in which the disease is endemic. This virus is contained in the intestinal discharges of persons affected with the disease, but it is not a product of the intestines—that is, the germs of the disease do not multiply within the human organism. When choleraic discharges pass into certain soils the seeds of the contagium germinate and produce a new crop of infectious organisms of a miasmatic nature. An attack of the disease is caused by these miasms ascending into the air and becoming absorbed into the body. In India the production of cholera requires a moderate degree of humidity of the soil; when the latter is either very dry or saturated with moisture the cholera miasm is not generated. He gives numerous instances showing that when the condition of soil was favourable in the way indicated cholera was generally developed. Porosity of soil appears to be very favourable to the production of the cholera germs. Isolated cases may happen in houses built on rocks or on impervious clays, but epidemics of the disease cannot occur in such places.

Professor Vogt, of Berne, in his work "Trink Wasser oder Bodengase," 1875, announces that having carefully studied all the theories in reference to cholera, he gives the first place to that propounded by Pettenkofer.

The case of the Limehouse School for pauper children has often been quoted in support of Pettenkofer's theory. The institution stands upon a bed of clay, surrounded on all sides by gravel. Although cholera raged all round the school, not one of its 400 inmates caught the malady. It must, however, be noted that the most extraordinary precautions were adopted to exclude cholera, and even quarantine regulations were adopted.

During the sitting of the "Cholera Conference" at Weimar, in 1867, a map of Thuringia was shown in which the places ravaged by cholera were depicted. The fact that the disease was confined to a particular geological formation, such as that held by Pettenkofer to be essential for the wide diffusion of cholera virus, was regarded as a strong piece of evidence in favour of the Munich Professor.

In London, in the 1866 epidemic, cholera was rife on the gravels on both sides of the River Lea, but according to Radcliffe the disease did not extend largely over the same kind of soil which was contiguous. He noticed that the limits of the epidemic were determined by a contour which bore an evident relation to houses and not to soil. Dr. Weir observes that in Bombay cholera is distributed without any relation to the nature of the soil (Report of Municipal Commissioner for Bombay, 1875, p. 164).

Dr. Pettenkofer considers that potable water plays no part in the propagation of cholera, and contends that the disease is not directly communicable. As in the case of typhoid fever, the condition of the ground water is a factor in the spreading of the malady. As the water sinks, so the miasms increase in the partially dry soil, and extend therefrom to the atmosphere. To cause an epidemic there must be—(1) a specific germ; (2) certain local conditions; (3) certain seasonal conditions; (4) certain individual conditions (*receptivity* or unusual susceptibility to contract the disease).

Dr. Mapother has ascertained that three-fourths of the deaths from cholera in Dublin in 1866 occurred close to old watercourses, some of which had been converted into sewers, and others filled up with loose soil.

Johnson's Theory.—Dr. George Johnson[a] holds that cholera is produced by a morbid poison, not a parasite, which enters the blood either through the lungs or through the gastro-intestinal canal. This poison irritates the muscular tissues and causes the cramps, and impedes the flow of blood. A strong argument in favour of this theory is, the author believes, to be found in the fact that patients often die without having suffered from much vomiting or purging, the fatal result in such cases being due to the retention of the poison in the blood which brisk evacuations would otherwise have eliminated. Mr. Simon is opposed to Dr. Johnson's theory, as is also Dr. Thudichum, who, after careful

[a] Notes on Cholera, p. 85. London, 1866.

and laborious examinations, declares that there is no chemical evidence of the presence of any particular poison in the blood.

Bryden's Theory.—Dr. Bryden, an eminent Indian sanitarian, holds that cholera virus is generated in the soil of many districts in the lower provinces of India, and is indigenous in those localities. From time to time this virus is transported by moist air to the upper provinces, where, however, it is unable to maintain itself, but dies out in periods usually of four years. It becomes dormant for a certain interval, but without losing its vitality. By observation of its natural laws the life-history of the virus may be sufficiently known to enable the time at which it becomes active after a dormant period to be predicted with accuracy. Certain areas are annually free from cholera and certain areas affected by it, and the geographical distribution of the disease may be foretold by the study of these parallels, which are the result of meteorological influences. Dr. Bryden also contends that epidemic cholera does not result from human intercourse, nor can it be spread out of its natural province by human agency. A moist atmosphere is the invariable vehicle of cholera, and the direction of its movement depends upon the prevailing wind. Still it is admitted that individual cases of cholera can occur by transmission from those affected with the disease, or from fomites charged with cholera virus, but that no aggregation of such cases ever produce a "provincial manifestation of cholera." Bryden's theory seems to be in favour by the Indian Government. It differs but little from Pettenkofer's.

Water Carriage Theory.—The subject as to the influence which potable water has exercised in connexion with the epidemics of cholera has been much debated.

In 1849 Dr. J. Snow attributed several localised outbreaks of cholera in the outskirts of London to the use of water containing cholera-dejecta. In 1854 the London College of Physicians expressed their dissent from the opinion that the disease was propagated through the medium of water. Nevertheless the proofs of the water-carriage of cholera virus that have been accumulated appear to be irresistible, though I am not satisfied that they demonstrate that the disease is only, or even chiefly, communicated in that way.

In 1855 Dr. Snow,[a] of London, attributed a severe local outbreak of cholera, which had occurred the previous year, to the use of

[a] Mode of Communicating Cholera. Pp. 44. Second Edition. London. 1854.

water taken from a favourite pump in Broad-street. About 500 persons who drank the water died within a week. The water was analysed by Dr. Dundas Thompson, who reported that it contained the large amount of six grains of organic matter per gallon. Dr. Lankester subjected it to microscopic scrutiny, and detected in it great numbers of a peculiar fungus.

So soon as the use of this water was discontinued the local epidemic, which had been previously declining, utterly ceased. Attempts have been made to prove that the cessation of the epidemic and the disuse of the water were mere coincidences ; but Dr. Snow's conclusion that the foul water spread the disease is generally accepted.

A lady who had been in the habit of drinking the water whilst a resident in the neighbourhood of the pump, continued to send for it after she had removed to Hampstead, three miles distant. She and her niece were seized with cholera, although the disease was not at the time prevalent in the district. A similar case came under my observation in 1866. Many persons who were using the water of a pump in Duke-lane, Dublin, contracted cholera. A shopkeeper, whose business establishment was close to the pump, daily brought out a small jar of the water which it furnished for the use of his family, who lived in the country. Four of his children died from cholera, though no other persons in their neighbourhood was affected with the disease. This water was cool and sparkling, but my analysis of it proved that it was polluted with sewage. The pump was consequently closed by the Corporation.

Dr. D. Thompson states that two companies supplied the water to certain districts in London during the cholera epidemic of 1854. One of the waters was exceedingly impure, and was found to contain excremental matter; the other was comparatively pure. They were supplied to a population placed under identical conditions ; but it was found that of those who used the polluted water 130 per 10,000 persons died, whilst only 37 persons per 10,000 died from cholera amongst those to whom the purer water was supplied. Dr. Thompson concluded that 2,500 persons had lost their lives through the use of the impure water. During the epidemic of 1866 I attributed many local outbreaks of cholera to the use of polluted water. In Mallow, where there was very pure water in one part of the town, and extremely impure in another, the disease raged only where the water-supply was tainted. In Arklow, where the

disease was very severe, I found nearly all the local wells highly polluted. I could give many similar instances.

A serious outbreak of cholera at Newcastle-upon-Tyne, in 1865, was apparently traced to the use of the water of the Tyne (Report on the Epidemic Cholera of 1866 in England, by the Registrar-General, p. 33). In 1865 Mr. Radcliffe attributed an outbreak at Theydon Bors to the use of poisoned water. In 1866 Dr. Farr and Mr. Radcliffe published numerous facts in relation to the epidemic in East London, which appeared to prove that the disease was caused by the use of impure water supplied by the East London Waterworks Company (Report of the Medical Officer of the Privy Council for 1866, and also Supplement thereto). Dr. Letheby and others have expressed a contrary opinion as to the proximate cause of this epidemic; but the facts of the case strongly favour the water-carriage theory.

Cholera has often broken out on board ship. In 1866 Professor Parkes attributed to the impure water used on board a steamer at Southampton the occurrence of many cases of cholera on board the vessel (Army Medical Report for 1866). In the same year I found that the water on board the "Olive"—a vessel lying in Dublin, some of the crew of which contracted cholera—had very impure water on board. It contained ten grains of organic and volatile matter per gallon, and was teeming with infusorial animalcules. Professor Frankland, in his paper on "The Water Supply of London and the Cholera," in the *Quarterly Journal of Science* for 1876, gives many proofs that water is a vehicle for cholera poison.

In Germany opinions are divided in reference to potable water being a vehicle for the distribution of cholera. The great authority which Pettenkofer exercises in sanitary matters no doubt has had much weight in influencing his countrymen against the water-carriage theory. Dr. Günther[a] denies that cholera was in any instance spread by water in Saxony. Volze, Witlacil, and other writers, have advanced similar opinions. On the other hand, Richter, Dinger, Foerster, and Lebert, consider that polluted water propagates the disease. Schieffendecker states that during the six epidemics of cholera which raged in Königsberg it has been noticed that the people who drank water from a source known to be pure escaped from the disease to a far greater extent than those who used the water furnished by the other Pregel and superficial town wells, which was proved to be impure. Lebert cites the following

[a] Die indische Cholera in Sachsen im Jahre 1865.

case reported by Graetzer:—In a house at Breslau the contents of a privy escaped into a well, from which the water supply of the house was obtained. In the beginning of the cholera epidemic of 1867 twelve of the inhabitants of the house were attacked and eleven of them died. Other persons in the locality who drank water from this well were also affected ("Ziemssen's Cyclopædia of Medicine," Vol. I., p. 381).

An elaborate Report upon the last epidemic of cholera in Holland was published by Dr. A. M. Ballot of Rotterdam. He states that the Netherlands suffered greatly during each of the epidemics of cholera which visited that country, but chiefly in those places where the water used was derived from canals or from ground saturated with sewage matters. In the places where rain water was generally drank the disease was comparatively infrequent, and wherever rain water alone was used the disease never became epidemic—the single cases which occurred were imported ones. It was found that the substitution of a pure supply of water for the foul kind in use in some districts caused the immediate cessation of the disease. The voluminous evidence collected by Dr. Ballot shows that in Holland cholera followed the course of the canals. Another Dutch physician, Dr. Smellen, attributed many cases of cholera in Utrecht to the use of vitiated water.

In the United States army, during the last epidemic of cholera, the use of pure water was found most efficacious in arresting the progress of the malady. So well was it known to some medical officers that foul river and well water propagated the disease, that when rain water could not be procured the troops were furnished with distilled water (*vide* Report of Dr. J. J. Woodward, U. S. Army).

Dr. C. Macnamara, in his valuable treatise on "Asiatic Cholera," already referred to, has strongly maintained the water-carriage theory of the disease. He considers that cholera dejections are the most virulent when quite recent. If in this state they are mixed with water, the mixture will be found to swarm with vibriones, but in about three days (in India) ciliated infusoria make their appearance, and five days later bubbles of gas ascend to the surface and coniferous growths line the sides of the vessel. Dr. Macnamara considers that the water containing cholera dejecta becomes innocuous when the organic matter has passed through its vibrio stage of decomposition, but he is positive that the infective properties of the mixture no longer exist when the organic matter

in the contaminated water reaches the third stage of decomposition—*i.e.*, when the coniferous growths are present.

Dr. Macnamara attributes several outbreaks of cholera in India to the use of polluted water. The water used at Mean Meer, in which there was a severe epidemic in 1861, was found to be impregnated with organic matter and to have an alkaline reaction—the latter circumstance is significant, seeing that choleraic evacuations are alkaline. Amongst other cases which he cites, the following appears to be a strong one:—Cholera dejecta entered a potable water which during the day was exposed to the direct heat of an Indian sun. The following day nineteen persons drank in small quantity this water, which presented nothing peculiar in flavour or odour. Within seventy-two hours five out of the nineteen persons contracted cholera, though cholera was not at the time prevalent at the place.

Dr. De Renzy,[a] in his Reports on the Sanitary Administration of the Punjâb for 1868 and 1869, is a strong advocate of the water-carriage theory. He concludes, from an examination of Pettenkofer's theory, that it gives no assistance in interpreting the phenomena of cholera in the Punjâb. He mentions many cases where the evidence in favour of the propagation of cholera contagion in potable water appeared to be irresistibly strong.

In Northern India, during the epidemic of 1866–68, it was noticed, that whilst the water-tanks were fouled by dipping clothes into them and bathing in them, and that the supplies were drying up, the disease rapidly increased. On the other hand, when the tanks were cleansed and re-filled with pure water, cholera vanished, and did not reappear during the time that rain kept the tank full of water.

Dr. J. Payne[b] Health Officer for Calcutta, informs us that cholera declined greatly and suddenly after the introduction of pure water into the city in 1870. The mortality from the disease remained low until the water, which at first was a continuous, became an intermittent, supply, necessitating the use of tanks; thereupon cholera production immediately increased.

Colonel James Puckle shows that the contamination of water is the most common cause of the spread of cholera. Several outbreaks occurred at Bangalore, 3,000 feet above the level of the sea, and at Toomkoor and Mysore; in every case after droughts and when the wells and tanks were very low. So soon as rain fell

[a] Lawrence Press, Calcutta.

[b] Indian Medical Gazette, Sept., 1876.

plentifully the disease ceased. The natives throw dejecta on the ground, where they soon dry, and, becoming reduced to dust, are transported by the winds into wells and tanks (*Journal of the Meteorological Society*, April, 1876).

During the terrible epidemic of cholera in Madras, in 1877, Surgeon-Major Cornish, Sanitary Commissioner, noticed that the water supplies were unusually impure. The supply in the City of Madras was so foul in quality and defective in quantity that when it reached the consumer it was like pea-soup, and was offensive in both flavour and odour. This authority is of opinion that the facts of the cholera epidemic of 1877 sustain the theory that the virulence of an epidemic of that disease is dependent upon the state of the water supplies. Dr. H. Blane, in his "Cholera: how to Avoid and Treat it" (London: King and Co., 1873), is also of opinion that cholera is largely propagated through the medium of impure water.

The admirable Report, in 1856, of Mr. Simon on the Cholera Epidemics of 1848–9 and 1853–4, as affected by the consumption of impure water, mentions cases which almost to an absolute certainty demonstrate that form of cholera propagation.

In 1870 cholera broke out on board the Channel Fleet. Donnet, who investigated the cause of the outbreak, considered that it was the result of drinking contaminated water shipped at Vigo and Lisbon. In this instance at least the state of the soil had nothing to do with the outbreak.

Cholera Contagium in Air.—It is in the highest degree probable that in the endemic area of cholera its contagium is carried up into the air out of the soil, as well as being diffused throughout water. Where cholera is exotic it is probable that the egesta of patients furnish the poison wholly or in great part. These matters may become desiccated and pulverulent, and in the form of dust enter the body by some channel—most likely by the mouth and œsophagus. Decomposing organic matter generates gases which often mechanically carry up into the air solid particles. When cholera is epidemic, sewer and midden gases are, probably, often the vehicles of the contagium.

An outbreak of cholera took place at the Devon County Lunatic Asylum. It was proved that the disease was introduced into the asylum at the males' side of the institution, forty of whom were soon affected, whilst not a single case occurred amongst the female inmates. Dr. C. Budd discovered that the contagium was communicated from man to man by the medium of the latrines, to

which all the males had access, but who were each provided with a separate apartment to sleep in. It was clear in this case that the emanations from the first deposit of cholera-infected matter in the latrines spread the disease amongst the persons who used them.

The contagium of cholera is believed to be propagated by means of the soiled clothing and bedding of the patients, and even by the hands of persons who attend upon the sick. If the fomites and alvine discharges of the patients are infective, it is easy to understand that there are many ways in which these matters may be conveyed into the bodies of healthy persons. Statistics show that washerwomen are peculiarly liable to contract cholera, evidently from washing the patients' linen, &c.

THE MATERIES MORBI OF CHOLERA.

Böhn states[a] that cholera is caused by the entry of a micro-fungus into the intestinal canal, where it propagates its species at the expense of the epithelial cells. In 1867 Professor Hallier, of Jena, published a tract entitled, "Das Cholera-contagion: botanische Untersuchungen Aertzer und Naturforschern mitgetheilt" (Leipzig, 1867), in which he stated that the dejections of cholera patients contained large numbers of minute fungi and other spores. When placed on pieces of intestine or muscular tissue the latter were quickly disorganised. Soon after, Professors Thorné, of Cologne, and Klob, of Vienna, announced that they had discovered fungi in the stomachs and intestines of cholera patients, which multiplied rapidly. These organisms produced choleraic symptoms in small animals to which they were administered. Lissaner, who experimented with fungi shortly after these announcements, maintained that the fungi found by Hallier were not contagious matter, and that their presence was a mere accident. Several eminent mycologists declare, too, that the fungi in question belonged to a European species. C. Macnamara, after a prolonged search for a fungus or bacterium peculiar to cholera evacuations, is obliged to confess that he has abandoned all his faith in the existence of any such organisms.

Drs. J. R. Lewis and D. D. Cunningham, in an Appendix to the Tenth Annual Roport of the Sanitary Commissioner with the Government of India, 1874, gives the results of numerous experiments made to discover the nature of cholera virus; they found no evidence of the presence of bacteria in the blood of cholera patients.

[a] Die kranke Schleimhaut in der asiat. Chol. Berlin, 1836.

A considerable leucocytosis existed in it; and in some specimens, freshly drawn, minute detached points were observed which moved about actively, showed no evidence of organisation, underwent no development, and disappeared in a few days. In the blood of syphilitic patients no bacteria were detected, although that disease is undeniably inoculable. Two hundred Spanish dogs were experimented with in order to test the effects of choleraic stools. Solution of the stools injected into the veins caused 7 deaths out of 15 animals = a mortality of 46·6 per cent. The same solution boiled produced a mortality of 54 per cent. Solutions of normal fæces caused the deaths of 8 per cent. of the animals to whom it was administered, and a higher mortality (35 per cent.) when the fæcal matter was putrid. The only difference between the effects of choleraic and normal fæces was the higher mortality caused by the former. The *post mortem* examinations of the animals showed that they had suffered from gastro-enteritis.

Messrs. Lewis and Cunningham contend that the experiments which appeared to prove the deadly effects of choleraic discharges upon the animal economy were made upon weakly and fragile animals, such as mice and rabbits. It was found that mice to whom bibulous paper steeped in choleraic fluid had been given had died; but H. Ranke has shown that filtering paper, minus choleraic stuff, causes disease in mice. It is clear the question as to the precise nature of the *materies morbi* of cholera is in a very unsatisfactory condition at present. Dr. Weir, Health Officer for Bombay, had directed attention to the fact that the persons in that city whose business it is to collect ordure are not more liable to cholera than other classes.

PROPHYLAXIS.

The most effectual manner in which to exclude cholera from a country would be to prevent the entry of persons and articles from infected districts. In practice it has been found impossible to effect so rigid a quarantine as this. In 1831 a determined attempt was made to keep cholera out of St. Petersburg. A cordon of soldiers and police was drawn round the city, and no one was allowed to enter it unless he could prove that he had not, for however brief a period, been in an infected district. Notwithstanding these precautions St. Petersburg was attacked by cholera at as early a date as many other parts of the North of Russia.

On the other hand, it is asserted that the immunity from cholera

which certain parts of Bavaria, Saxony, and Mecklenburg enjoyed during cholera epidemics was the result of precautionary measures vigorously enforced. In most countries quarantine regulations more or less effective are enforced when an invasion of cholera is apprehended.

Dr. C. Macnamara suggests that quarantine regulations would be more useful at the ports of debarkation than elsewhere. He considers it is improved naval hygiene we should rely upon rather than upon lazarettos. The Indian Government ought to make every effort to prevent the disease from passing into Afghanistan, for whenever cholera reaches Herat it is certain to spread into Persia, Asiatic Turkey, the Khanates, and Asiatic Russia. The roads from India into Afghanistan are not numerous, and quarantine regulations might be carried out at this "scientific" frontier at a moderate cost.

When cholera makes its appearance in a district, very prompt and comprehensive measures may at once cut short the disease. The moment the first case is announced the medical officer of health and a sufficient number of the sanitary staff should proceed to the patient's home. The matter ejected from the patient should be at once disinfected, wherever it may be found. If some of it has already been thrown into the privy or ashpit, the whole contents of those receptacles should be promptly disinfected. Should any choleraic discharge have fallen upon the floor, stairs, &c., it should be treated with a disinfectant *in situ*, and then carefully scraped up and removed for more perfect treatment. Should the patient die or be removed to hospital, his clothes and bed clothes should be burnt, and the house in which he lived should be thoroughly disinfected by both gaseous and liquid applications. If at all possible the patient should be promptly removed to hospital, and the greatest care taken to have the vehicle which conveyed him there purified. Everyone who had been in contact with the patient should take full baths, and no one should partake of food or drink in the sick room, nor should the attendants on the affected be more numerous than are absolutely required. When relieved from duty the nurse should perform the most thorough ablution. No water should be drank that had not been recently boiled for ten minutes, and great care should be taken to preserve water from pollution. The water which has been kept in the house all night should not be used for drinking or cooking purposes.

What is the best disinfectant to apply to the choleraic dis-

charges? Dr. John Dougal says that carbolic acid is not a disinfectant, but merely a preservative agent, whilst Lebert considers it the best material to use in the treatment of choleraic dejecta, &c. Whatever disinfectant may be employed should be used in very large quantity in order to insure a thorough destruction of the zymotic properties of the discharges. Sulphurous acid and carbolic acid conjointly might be used. One pint of hydrochloric acid and one pound of sulphate of iron dissolved in a gallon of water would make a powerful disinfectant for the alkaline dejecta of cholera.

General Prophylaxis.—If cholera is expected the best preparation to resist the invader is to have streets, houses, clothes, persons and water as free from filth as possible. The privies should be cleaned and carbolic acid or chloride of lime applied to them. The condition of the house drains and main sewers and their traps should be looked after, and the defects which are sure to be detected, if looked for, remedied. The markets should be inspected, and no unripe or over-ripe fruit or vegetables allowed to be sold. Ample stocks of disinfectants should be laid in, and vehicles for the removal of the sick to hospital should be provided. It is desirable to ascertain whether or not houses could be procured for the purpose of turning them into temporary hospitals, should the epidemic assume large proportions. In the larger towns the temporary hospitals should not be too distant from the localities likely to furnish their inmates. The nature of the supplies of water is a point of primary importance. Every source should be examined, and those of impure or doubtful nature closed. As a rule the local wells and pumps in localities densely inhabited will be found unfit for use.

When cholera is established in a district, printed instructions for the better observance of sanitary precautions should be circulated amongst the people, and they should be instructed how to act in the event of an attack of cholera being apprehended. The importance of the premonitory symptom of diarrhœa should be dwelt upon. House to house visitations by the sanitary staff and by volunteer sanitarians is a useful measure. When cholera reappears frequently in the same house it should be closed as "dangerous to health," and its inmates transferred to one of the houses which the local sanitary authorities ought if possible to provide for such emergencies. For prophylactic purposes every case of diarrhœa should be regarded as one of cholera, so far as the disinfection of the dejecta of the patient is concerned.

Küchenmeister has suggested the mixing of choleraic discharges with sawdust, in order that they may be burned. The Sanitary Commissioner, with the Government of India, considers that this plan is unsafe, because, during the combustion of a portion of the mixture, a volatile infective matter might be distilled out of the other part not yet heated to incandescence. Dr. De Renzy, however, highly approves of the combustion process, and considers Dr. Bryden's objection untenable. The addition of paraffin to the sawdust is desirable, as it causes an immediate combustion of the mass. During an epidemic it might be found practicable on the part of the sanitary authorities to supply sawdust and paraffin mixture to infected houses. In the hospitals this mixture could be readily obtained.

I cannot too strongly insist upon the importance of sparing neither time nor money in the attempt to arrest the spread of cholera when it first appears. A sum of £50 spent in such an effort may be the means of saving hundreds of lives, and of obviating the necessity for a long-continued expenditure of money, and of stamping out an outbreak which otherwise might entail enormous expense upon the ratepayers. It is stated[a] that Bristol escaped almost completely the epidemic of 1866 owing to the vigorous system of disinfection carried out by Dr. Davies, Medical Officer of Health.

It is stated that during the last epidemic of cholera at Leipzig the most extraordinary efforts were made to disinfect the city, and yet never before had so severe an outbreak occurred. Perhaps, however, the disease might have been even more destructive had the disinfecting operations been less energetically carried out. Cleanliness, as a preventive measure, ranks much higher than disinfection.

In the case of a vessel placed in quarantine the following precautions should be adopted:—The vessel should be moored in deep water. If the patient can use the *petit* of the vessel so much the better, as the choleraic matter then passes directly into the sea. If he cannot, then the discharges should be disinfected and thrown overboard as soon as possible. The *petit* should be kept clean, and the vessel at large should be kept as free from filth as possible. Suitable disinfectants might with advantage be used. Should a patient die, the body should be heavily weighted and consigned to the sea, preferably at some distance from the vessel, seawards ; the clothing and bedding of the deceased should be burned.

[a] British Medical Journal, April 13th, 1867.

ART. V.—*Iodoform Intoxication.*[a] By P. J. HAYES, F.R.C.S.E.; Surgeon to the Mater Misericordiæ Hospital; Lecturer on Surgery, C. U. School of Medicine; Examiner in Surgery, Royal University, &c.

PARTICULARS of the following case I deem of sufficient interest for communication, as I believe surgeons in this country have not hitherto encountered instances where dangerous symptoms were induced by the application of iodoform to wounded or ulcerated surfaces.

I have to thank Mr. Thunder, lately House Surgeon to the Mater Misericordiæ Hospital, for notes of the case; and I am indebted to my esteemed *confrère*, Professor Tripier, of Lyons, and to his pupil, Dr. Victor Martin, for much information respecting the surgical employment of iodoform on the Continent. Observations based upon the original investigations of Martin, together with experiences of other investigators, I have appended to the report of my case.

CASE.—P. C., aged twenty-three years, a man of slender frame, temperate habits, and by occupation a field labourer, was admitted to the Mater Misericordiæ Hospital on the 1st of November, 1882, suffering from an abscess situated on the posterior part of the right side, about two inches below the inferior angle of the scapula.

The patient stated that early in August he began to experience pain below the right shoulder-blade. This pain soon became severe, causing him particular distress at night, as he was unable to rest upon either side, and compelled to lie altogether on his back.

The only cause to which he could attribute the origin of his disorder was that during the summer he had laboured very hard at scythe-mowing—a form of work to which he had been previously wholly unaccustomed.

Towards the end of August swelling made its appearance at the painful region, accompanied by increase of distress and inability to work. After a short period relief was experienced, inconvenience only being felt owing to the bulk and tension of the swelling.

Examination of the patient did not reveal the existence of spinal disease, and the man's general health seemed to be in fair order.

On Nov. 2nd, fourteen ounces of pus were evacuated by aspiration. The abscess rapidly re-filled, however, so that it became necessary, ten days later, to make an incision and insert a drainage-tube. As purulent discharge continued to be copious, on the 27th Nov. pressure was made,

[a] Abstract of a paper read before the Biological Club, January 9, 1883.

so as to completely empty the cavity, and 60 grains of iodoform were introduced. Two days afterwards a like quantity was inserted, with the effect of causing a very notable decrease in the amount of discharge. The iodoform was again used on the 1st and 3rd of December, but on the evening of the 3rd the patient developed alarming symptoms: he became delirious; his temperature rose to 104° F.; the pulse-rate reached 120 in the minute. Soon he presented an unconscious aspect, lying on his back in a kind of stupor, the limbs extended, the mouth open, the pupils dilated, and the sphincters relaxed. He seemed to sleep but little, making frequent attempts to throw off the bed-clothes. His tongue was dry and brown; he did not vomit; and, though unable to take solid food, he drank freely when a cup was held to his lips, but he could not hold a drinking vessel in his hand, nor did he seem capable of understanding the signification of words spoken, or of objects presented to him. There appeared to be marked impairment of muscular power. The man remained in this state for five days; then a sharp attack of diarrhœa occurred, and the patient's condition underwent a change for the better. He evidently began to recover consciousness, although he continued to present a dazed aspect, and whenever Dr. Thunder approached his bed he endeavoured to assume an all-fours position, resting on his hands and knees, as though he expected his back was to be dressed. From this time his progress was satisfactory, and by the eleventh day from the development of symptoms he seemed to be free from traces of iodoform intoxication.

The abscess began to secrete pus again as the symptoms subsided, and it was deemed advisable to lay open the now reduced cavity, and allow the space to heal from the bottom. The process of granulation rapidly progressed to perfect obliteration of the abscess, but before the patient left hospital, early in January, the presence of tubercles in the lungs became manifest, and it is probable the disease will run a rapid course.

At my request Mr. Dwyer, Resident Pupil, made a careful examination of this man's urine during the continuance of the symptoms I have described. The sp. gr. was 1036, the urine being concentrated and scanty. Neither sugar nor albumen could be discovered, but the reaction characteristic of the presence of iodides was readily obtained.

I was desirous that the saliva should be tested with calomel, in order to ascertain whether the yellow mercurous protiodide, as described by Dr. Lediard, would be formed, but through an oversight this experiment was not made.

It would be superfluous for me to attempt any description concerning the physical or chemical properties of a substance so well known as iodoform. I shall only refer to the following facts, because they bear a direct relationship to particulars I shall have

to mention presently. One part of iodoform is soluble in about twelve parts of oil; moderate heat serves to increase the solvent power of oil; solutions of iodoform are rapidly decomposed by exposure to sunlight. It has been proved that iodoform possesses, in addition to other properties, that of acting as a local anæsthetic. This property usually becomes apparent when the compound is applied to moist or mucous surfaces, and Morétin ascertained that suppositories containing iodoform were capable of producing such marked insensibility of the rectum that defæcation might occur without consciousness on the part of the patient. For this reason Lallier recommended iodoform suppositories to be employed where suffering is caused by painful ulcer or fissure of the anus, but later experience has proved that it is in cases of malignant ulceration of the rectum iodoform suppositories will be found of greatest service, because they frequently render the act of defæcation almost, if not quite, painless.

Eastlake, Demarquay, and others have observed cessation of the pain attendant upon uterine cancer follow free applications of iodoform to the ulcerated part; and during the past year my colleague, Dr. Redmond, has found pills containing iodoform effective in removing pain and relieving other symptoms indicative of gastric ulceration.

Dr. Ball lately mentioned to me that in cases of stricture of the urethra, complicated by extreme irritability and tendency to spasm, he introduces a small bougie of iodoform, and allows it to dissolve in the urethra close to the stricture. This renders the passage far more tolerant and favourable for the introduction of instruments.

When iodoform has been administered internally, a certain amount will be absorbed by the mucous surface of the digestive tract. Righini's investigations on this subject lead him to conclude that the iodoform becomes in part combined with soluble azotised compounds, which are absorbed as peptones, and in part it forms an iodide with starchy substances, which may either be absorbed or, more probably, discharged from the system with fæcal matter.

Hægyes has carefully studied the absorption of iodoform by raw surfaces. He states that in the first instance fatty matters, exposed in the wounded surface, serve to dissolve the iodoform, and so prepare it for absorption. Then the compound having entered the living tissues in a state of solution, the iodine in great measure separates from carbon and hydrogen, and combines with albumen, constituting an iodide of albumen.

This iodalbumen, which can readily be conveyed to every part of the organism, is capable of producing the same effects as iodoform—effects different from those which appear after absorption of saline iodides and iodates. I think we may fairly conclude that the activity of absorption from a raw surface will bear a certain relationship to the amount of fat exposed in the wound, the extent of open surface, the condition of that surface (whether freshly wounded or granulating), the quantity of iodoform employed at a time, the frequency of making additional applications, and perhaps the degree of pressure exerted by bandages and other dressings.

Soon after absorption of iodoform will have taken place, evidence of its presence in the various tissues and fluids of the organism can be obtained, so we may readily suppose that if used during pregnancy it would probably exert an influence more or less prejudicial to the fœtus.

Iodoform seems to possess cumulative properties, but for all that the work of elimination commences soon after circulation will have conveyed iodalbumen to the excretory and other organs (as the kidneys and salivary glands). The iodine is discharged from the system in the form, usually, of alkaline iodides—exceptionally, of iodates.

Elimination of iodides by the kidneys, after absorption of iodoform from a wounded surface, has been closely studied by Martin, and, according to his experience, iodides can be detected in the urine some hours after application of the first dressing. Iodides will be found in the urine so long as iodoform continues to be taken into the system, and their amount bears a direct relationship to the quantity of iodoform absorbed.

After disappearance of every trace of iodoform from the wound, the process of elimination will continue for some time, but never beyond a period of ten days.

When testing for iodides in the urine, a little chloroform is first added to the liquid, and then a few drops of nitric acid. The iodine set free causes a fine red-amethyst coloration of the fluid; but for this to occur, examination must be made before ammoniacal decomposition will have taken place, and the observer should be careful not to add an excess of nitric acid.

The absorption of iodoform does not produce any notable change in the amount of the urinary secretion. Experiments upon the lower animals have been practised by Maitre, Morétin, Binz, Martin, and others, with a view to ascertain the effects capable of

being produced by absorption of moderate and of large doses of iodoform. In small doses the drug produces anodyne effects, but in large doses it causes symptoms of narcotic poisoning. Maitre divides the nervous manifestations into two distinct periods. The first is characterised by a species of intoxication attended with faintness. The animals appear to be overcome by torpor, and if forced to rise, they walk with tottering gait. Should the dose of iodoform have been moderate, all these symptoms will subside within twenty-four hours; but if a large quantity of iodoform should have been administered, the second period, or that of convulsive symptoms, will make its appearance with startling abruptness. The animal then loses the aspect of prostration which it previously presented; it is seized with convulsive movements resembling those caused by poisoning with strychnia; soon spasmodic contractions of the muscles of the neck and limbs occur, so that the animal seems to be suffering from tetanus (more especially from the form called opisthotonos); the animal seeks dark places, as though photophobia existed, and before long death occurs. Maitre found 30 grains administered internally sufficient to induce these phenomena in a duck—double that quantity was required for a rather small dog.

The experimental researches of Martin enable him to state that when dogs are poisoned with iodoform, no other symptoms occur than those of narcotism, paralysis, fall of temperature, and death; whereas in the case of frogs, tetanic convulsions and rigidity of the limbs, as described by Maitre, are to be noticed.

In order to ascertain the effects of medium and large doses of iodoform upon arterial pressure, the pulse-rate, and the respiratory movements, Martin lately instituted a number of experiments on dogs in the laboratory of Chauveau. He found doses of 60 grains to be followed by increase of arterial pressure, fall in frequency of the pulse, and diminished amplitude of the respiratory movements. Fatal doses, of about 150 grains, will cause irregularity of arterial pressure, will augment the number, but render feeble the force, of the cardiac contractions, and so reduce the respiratory action as to determine the occurrence of apnœa.

With regard to pathological anatomy, Martin agrees with Hægyes and Binz that when chronic intoxication has been maintained the liver will present a condition more or less distinctive of fatty degeneration, but he has failed to detect any such alteration in the kidneys, heart, or general muscular system. In cases of acute or

rapid poisoning he found the liver either congested or exhibiting an early stage of fatty change; sometimes a congested state of the cortical structure of the kidneys was to be observed, but the most constant lesion discovered was lung-congestion, best marked at the base, and generally attended with one or two points of hæmorrhagic extravasation.

Neither the nerve centres nor the mucous surfaces exhibited the smallest lesion capable of explaining the grave disturbances which attend iodoform poisoning.

For some years past iodoform has been largely employed in the treatment of various surgical diseases. To quote a few examples—Lichfield found it serviceable for chronic glandular, and cutaneous affections. Humbert, Morétin, and Lallier experienced good results from its use, in the form of suppositories, not only for painful affections of the rectum, but also when engorgement of the prostate caused distress. Féréol and Mandelbaum derived advantage from applications of iodoform when treating indolent ulcers. Lallier and Petiteau pointed out its beneficial influence on chancroid ulcerations. Coyne found it capable of effecting good when applied to surfaces attacked by noma. Czerda and Spencer consider it a very useful application when otorrhœa exists associated with perforation of the membrana tympani. Cheyne recommends the insertion of iodoform bougies for the cure of gonorrhœa. And I have referred to advantages which are to be gained by its use in certain affections of the eyes, and also for the radical cure of hydrocele.

It is only since 1879 that iodoform has been employed as an antiseptic dressing for wounds by German surgeons, the chief promoters of this method being Mostig-Moorhof, Mikulicz, Billroth, Gussenbauer, and Léoschin.

Recent experiences go to prove that the antiseptic properties of iodoform are not so available as to render it capable of becoming a substitute for carbolic acid. Moreover, it requires to be employed with caution, as too free an application may induce fatal consequences. It will be advisable to consider, in turn, the methods in vogue with surgeons who apply iodoform to wounds, the advantages which can be claimed for it as an antiseptic dressing, the dangers which are apt to follow its injudicious application, and the precautions to be observed when the employment of it appears advisable to the surgeon.

When the fancy for using iodoform, as a substitute for Listerism, seized the German surgeons, very large quantities of iodoform were

oftentimes applied to extensive operation wounds—indeed so much as from three to six ounces was not considered to be an undue amount for introduction at a first dressing. Mostig-Moorhof, however, employs not more than from five to ten drachms. The ordinary method of using it is to shake it freely over the wounded surface, and to fill every cavity or offset from the wound with it; then to apply dressings of either iodoform gauze or boric cotton. Professor Tripier recommends it to be applied in a more guarded manner than that by which so many unfortunate results have been caused in Germany. He always irrigates a wound with carbolic solution; and when there is so great a loss of substance that the wound-edges cannot be brought into contact, he lightly dusts the raw surface with iodoform, covering the cavity with Lister's gauze. When changing dressings he takes care not to disturb the previously applied iodoform, but after gentle washing he adds just enough of fresh iodoform to re-cover any exposed surface in the wound. This combined form of dressing he believes to be particularly suitable after operations about the natural orifices, in cases of contused or lacerated wounds of the hand, and where caseous glands have been cleared out with a sharp spoon. Tripier also favours the application of Moleschott's collodion (consisting of iodoform, 1 part; collodion, 15 parts) for incised wounds about the face. I think many surgeons in this country have had an experience as extensive and satisfactory of iodoform dressings as has been that of Professor Tripier. The advantages which may fairly be claimed for iodoform are—that it helps to allay painful sensibility, and serves to diminish the quantity and alter the character of discharge (removing fœtor, and causing a purulent secretion to assume a more or less serous condition); its presence causes the subsidence of fungoid outgrowths, on the one hand, whilst, on the other, it hastens the growth of healthy granulation-tissue; and, if it be not disturbed, it is apt, with serous discharge, to form such a protective covering for the wound that healing, as under a scab, is likely to occur.

The ill effects of iodoform may be classed into those of minor degree and the veritable intoxication. Kænig of Gottingen, Zeissel, and others, have reported cases where an erythematous eruption followed the employment of iodoform—disappearing when it was withheld, and recurring after its re-application.

With regard to real poisoning or intoxication, the statistics of Kænig extend over 32 cases—19 men and 13 women—the majority

of serious and fatal cases occurring amongst patients beyond the age of fifty years.

Kænig distinguishes two principal forms of intoxication—the light form and the grave.

In the light form the patients experience anorexia, headache, loss of memory; they appear morose, or even delirious, cry without reason, and seem fearful of being persecuted. The pulse becomes enormously accelerated—the temperature perhaps slightly elevated. Symptoms subside within a few days, recovery taking place.

In the grave form hallucinations of variable nature occur; sometimes delirium assumes a furious character, or the patient becomes terror-stricken, and may even exhibit a disposition to commit suicide. Food is refused; urinary secretion becomes scanty; the pulse is rapid; the temperature rises to perhaps 104° F.; the *dénouement* is almost always fatal, the patient dying in a state of coma.

Young subjects generally present symptoms resembling those of meningitis, but usually without elevation of temperature.

Kænig and Aschenbrandt have, like Martin, observed, at *post mortem* examinations, evidences of iodoform-pneumonia.

I think few surgeons will be found to oppose the recommendations of Martin and Veliaminoff, that iodoform should, in all cases where its use is indicated, be applied in small quantity; that especial caution should attend its use when much adipose tissue is exposed, and when the wound is extensive; that its employment is more or less contra-indicated by advanced age, tendency to fatty degenerations, diseased conditions of heart or lungs, and when there exists a susceptible condition of the nerve centres.

ART. VI.—*The Morbid Anatomy of Diabetes Mellitus.*[a] By BERTRAM C. A. WINDLE, M.A., M.D. (Dubl.); Pathologist to the General Hospital, Birmingham.

THERE is, perhaps, no other disease whose morbid anatomy has been so carefully explored, with so small practical results, as diabetes mellitus. Quite recently interest has been re-awakened in the subject, and a determined effort made to discover the secret of its pathology. In this paper I have endeavoured to embody, as far as possible in a tabulated form, the records of such autopsies on cases of this disease as I have been able to discover.

[a] Being a Thesis for the Degree of M.D. in the University of Dublin.

To these, by the kindness of the medical committee, I have been enabled to add the accounts of some examinations from the *post mortem* records of the General Hospital, Birmingham.

On glancing over the tables a fact, which must have already struck many, will at once become evident—viz., the extraordinary diversity of the lesions described in connexion with this disease. To this fact, and the deductions from it, I purpose returning later. I may as well state here that I am not in a position to advance any theory as to the pathology of diabetes mellitus, nor has such been my purpose in this paper. My object has been, if possible, to lay a foundation of cases which may possibly facilitate further work.

Without more remarks I will pass to the consideration of the lesions found in the various organs.

Brain.—The condition of this organ has been noted in 184 cases which I have found records of, with the following results:—

Table I.—*Brain.* *No. of Cases*, 184.

Normal	91
Excavations around arteries, beginning usually in hæmorrhages[a]	11
Enlarged perivascular sheaths of vessels (generally only slight)	8
Congestion of capillaries and degeneration of nerve cells in floor of fourth ventricle	4
Tumours in fourth ventricle	4
Hyperæmia	4
Anæmia	3
Atrophy	3
Cerebral hæmorrhage	3
Œdema cerebri	3
Puncta cruenta unusually numerous	3
Increase of sub-arachnoid fluid	3
Hyperæmia and fatty degeneration of floor of fourth ventricle	2
Extravasations on floor of fourth ventricle	2
Embolic softening	2
Softening	2
Hyaline thickening of coats of arteries	2
Disseminated sclerosis	1
Œdema of membranes	1
Softening and hyperæmia	1
Hypertrophy and anæmia	1
Tough	1
" and pale	1
Hard nodule in right middle lobe, with capillary extravasations	1
Suppuration at anterior inferior portion of right anterior lobe[b]	1

[a] Dickinson.

[b] After fracture of skull.

Softening of cerebellum and left middle peduncle[a]	1
Meningitis	1
"Tumour" (situation not mentioned)	1
Hæmorrhage over base, extending to medulla oblongata	1
Almost entire disappearance of gray matter at level of fourth ventricle	1
Softening of pons; induration of medulla oblongata; atrophy of olivary bodies	1
Softening and atrophy of medulla oblongata, with diminution of gray matter	1
Hydrocephalus	1
Tubercle	1
Sarcoma of right half of medulla oblongata	1
Induration and extravasations of blood in posterior part of right half of medulla oblongata	1
Ossific growth pressing on pons, with abscess in posterior cerebral lobes	1
Tumour on inferior surface of medulla oblongata	1
Point of softening at bottom of fourth ventricle	1
Vessels at base of brain diseased (? nature)	1
Blood clot in medulla oblongata and pons	1
Clot over right hemisphere	1
Small cavity, with whey-like and fibrous contents between left thalamus opticus and corpus striatum, eight similar ones on opposite side	1
Gumma	1
Cysticercus	1
Meningitis acuta purulenta	1
Thrombosis of sinuses[b]	1
Softening of pons and crura[c]	1
Swelling of tip of calamus scriptorius	1
Colloid-like bodies in medulla oblongata and cerebellum	1

The curious diversity of the lesions found in the brain is more marked than in the case of any other organ. Nevertheless, as will be seen from the preceding table, in almost exactly one-half of the cases described, no change was discovered. Of course a number of these brains were not examined microscopically, and therefore it may be a question whether they were really normal. But, on the other hand, a number were most carefully examined by competent pathologists, without the slightest deviation from the normal being discovered. There can be no disputing this fact, and it proves either that the seat of the disease is not in the brain, or that the change which produces it is one which, up to the present, has

[a] After fracture of occipital bone.
[b] Following caries of petrous portion of temporal bone.
[c] Syphilitic stenosis and thrombosis of basal arteries.

eluded all attempts at discovery. The important discovery of Cl. Bernard, in connexion with the artificial production of glycosuria, lends an additional interest to all lesions connected with the medulla oblongata and fourth ventricle. Of these twenty-three will be found in the table, yet it is a significant fact that no one of these changes was seen in more than four cases. When saying this, exception must be made in the case of the series of changes described by Dr. Dickinson,[a] which are too well known to need further mention. Since the appearance of his first paper, very careful search has been made in a number of instances for the lesions described by him, but the result has not altogether been to corroborate his statements. I have most carefully examined myself three brains and spinal cords with negative results. Again, these changes, said to be characteristic of diabetes, have been found in the brains of persons not the subjects of the disease. It seems probable that the method of preparation adopted—viz., that of hardening in chromic acid, may account for some of the appearances, as the tendency of this substance is to shrivel up tissues, more than is the case with other fluids. At the same time, it is only fair to say that these changes are not the necessary *sequelæ* of such a method of preparation—one amongst Frerichs' cases[b] is an instance in point. An interesting series of cases are those in which glycosuria has followed an injury, usually of the head. Two such cases, where cerebral lesions were discovered *post mortem*, are included in the table. In the paper from which they were taken,[c] in which there are collected a number of such cases, one other is mentioned where diabetes followed a fracture of the occipital bone and basis cranii, but the brain itself was quite normal.

Table II.—*Spinal Cord. No. of Cases*, 58.

Normal	37
Excavations around vessels, with sometimes dilatation of central canal	11
Hyaline thickening of coats of vessels	2
Congested	1
Soft in cervical region	1
Abscess in gray matter of cervical region	1
"Posterior columns changed" (? nature)	1
"Cord diseased" (nature of disease not specified)	1

[a] Med. Chir. Trans., 1870, p. 238, *et seq.*; and Diabetes, 1877.

[b] Plötzliche Tod und Coma bei Diabetes. Zeitschrift für klinische Medicin. Bd. 6, Heft 1, p. 10. No. 7.

[c] Arch. Gen. de Médecine, 1862, v. 2.

Congestion of vessels and clot beside cord at 3rd, 4th, and 5th dorsal nerves; softening of cord there, and at 3rd and 4th cervical nerves	1
Myxoma of dura mater, with changes in cord, including proliferation of epithelium in central canal, and sponginess of gray matter[a]	1
Old disintegration of gray matter at 7th cervical vertebra[b]	1

In connexion with the spinal cord there are some cases of glycosuria following injuries to the vertebral column. In one cited in the paper before mentioned dislocation of the vertebral column was followed by diabetes, but no lesion was discovered in the cord *post mortem.*

TABLE III.—*Ganglia of Sympathetic. No. of Cases*, 17.

Normal	8
Increase in connective tissue; thickening in capsules of cells; diminution of cells, and of medullated fibres in ganglia	5
Hyaloid thickening of coats of vessels	2
Pinkness of some when compared with others	1
Small	1

It is rather surprising how little attention has been bestowed on these most important organs. Poniklo's are, so far as I am aware, the only observations, up to the present, of much importance. In one of his cases, besides the changes mentioned above, he found dilatation of the blood-vessels; in another, pigmentation of the cells.

Before leaving the nervous system, it may be mentioned that tumours have been found in two cases pressing on the vagus.

TABLE IV.—*Heart. No. of Cases*, 94.

Normal	70
Small	9
Hypertrophied	4
Fatty	4
Soft	2
Pericarditis	2
Small and pale	1
Valvular disease	1
Covered with gelatinous substance	1

Under this heading may also be mentioned the changes described in the arteries by Dupuytren,[c] Lécorché,[d] and others. They are

[a] Smith. Brit. Med. Jour., April, 1883. P. 657.
[b] Glycosuria appeared fifteen days after fracture of the 7th cervical vertebra. Death in two years from phthisis.
[c] Dupuytren. Dict. de Méd. et Chir. Pratiques (*fide* Lécorché).
[d] Lécorché. Traité du Diabète.

of a fatty and atheromatous nature, attack most frequently the small arteries of the brain and its membranes, and often those of the retina. The large arteries seem generally to escape. Lately hyaloid thickening of the coats of the small arteries in various organs has also been described. The condition of the blood may also be alluded to here. In some cases it has a pink, "strawberry-ice" appearance, and on being allowed to stand, the serum collecting on the surface is milky white from the presence of quantities of free fat. This condition is met with, however, in a comparatively small number of the cases recorded, and as it occurs, according to Hertz,[a] in pneumonia and in drunkards, cannot be considered as peculiar to diabetes.

Table V.—*Lungs. No. of Cases*, 333.

Normal	75
Phthisis	109
Pneumonic phthisis	27
Congestion	19
Œdema	18
Cheesy or yellow scrofulous masses	17
Vomicæ	12
Pneumonia	10
Miliary tubercle	8
Gray hepatisation	7
Catarrhal pneumonia	6
Intra-alveolar extravasation of blood	6
Fluid in pleural cavity	3
Fat emboli	3
Cheesy bronchial glands	3
Sloughy cavities	2
Pleuritis	2
Red hepatisation	1
Œdema disintegrating	1
Gangrene	1
Hæmorrhagic infarcts	1
Hypostatic pneumonia	1
Empyema	1

It has long been a well-recognised fact that a very large number of the fatal cases of diabetes presented, on *post mortem* examination, the appearances of the disease, or group of diseases, known as phthisis. By referring to the table above it will be seen that out of a large number of cases rather more than one half presented these changes. About their nature there has been much debate; but the general opinion seems to be that they are

[a] Deutsch. med. Woch., 1881, No. 27 (*Vide* Saundby and Barling, loc. inf. cit.).

not tubercular in the strict sense of the word. Addison described the change as "albuminisation." It has been variously ascribed to the contact of saccharine blood and to nervous influence. The latter opinion seems by far the more probable, supported as it is by the evidence of direct experiment. An account of some of these experiments will be found in Dr. Dickinson's work.[a] In connexion with this point I may call attention to the fact that Dr. T. E. Little[b] has pointed out that lesions affecting the pneumogastric are a cause of certain forms of phthisis. The facts brought out in his papers on this subject lend additional support to the theory of nervous influence. The recent discoveries in connexion with the bacillus of tubercle form a new starting point for the investigation of the nature of these lesions. As yet, however, little has been done in this direction. Dr. Stephen Mackenzie[c] has examined four cases for bacilli with negative results. I have myself examined only one well-marked case, and in this I failed to find any.

The subject of fat embolism of the lung may here be alluded to. Professors Sanders and Hamilton[d] were the first to describe this lesion in a case of diabetes dying comatose with fatty blood. Since the appearance of their paper two[e] other cases have been reported of a similar nature in which a few fat embola were discovered. In other cases a careful search has failed to discover any. In two cases of diabetic coma which came under my notice I discovered none. It is true that the blood was not milky in either of these. It seems doubtful whether the appearances described by Sanders and Hamilton were fat embola at all. In a paper by Dr. Saundby and Mr. Barling[f] it is pointed out that "these so-called fat embola are mere *post mortem* thrombi with fat globules embedded in them," and the facts adduced by these authors seem fully to bear out their conclusion.

TABLE VI.—*Liver. No. of Cases*, 220.

Normal	84
Enlarged	38
" and congested	19
Congested	12

[a] Op. supra cit., p. 56–57.

[b] Irish Hospital Gazette, April 15, 1874; and Proc. Dub. Univ. Biol. Assoc., Vol. II., No. 2, p. 25.

[c] Brit. Med. Journ., April 7, 1883, p. 666.

[d] Edin. Med. Journ., July, 1879.

[e] Starr.—New York Med. Rec., May 1, 1880. Fitz.—Boston Med. & Surg. Journ., Feb., 10, 1881.

[f] Journ. of Anat. & Phys. Vol. XVI., pp. 522–524.

Fatty	12
Atrophy of cells	11
Small	9
Congested and hard	4
Hypertrophic cirrhosis	3
Homogeneous	3
Congested and fatty	2
Dark and homogeneous	2
Dilated capillaries[a]	2
Enlarged and containing abscesses	2
Tubercle	2
Malignant disease	2
Congested, with fatty changes and extravasations	1
,, ,, ,, and coagulation in veins	1
,, with coagulation in veins, and peculiar capillary dilatation[b]	1
Syphilomata	1
Large and calculous	1
Cirrhotic	1
Containing a large abscess	1
Pale	1
Hypertrophy of right lobe	1
Small and anæmic	1
Dark, small well-marked lobules	1
Hypertrophied, with colloid patches	1
Cloudy swelling of epithelium	1

The most common change recorded, as will be seen from the above, is enlargement with or without congestion. Careful microscopical examination has failed to discover that change in the organ which from physiological data we might be led to expect. According to some authors there is a proliferation of the hepatic cells, and Rindfleisch considers that this is limited to those in the periphery of the lobule which are most closely connected with the portal system. Other observers have not, however, confirmed these statements. Dr. Wilks considers that the appearance of the diabetic liver is quite characteristic, being firm, tough, homogeneous, or uniform in appearance, and dark in colour. In connexion with this organ it is interesting to note that in animals affected with diabetes, the most common lesion is fatty degeneration of the liver. Next to this comes atrophy of glands, especially the testes and ovaries. Lesions of the kidney are rare, whilst the only cerebral change recorded is steatosis and softening of the pituitary body,

[a] In one case the seats of these dilatations were depressed. Frerichs. Op. sup. cit., No. 12.

[b] Dickinson. Op. supra cit.

which was once observed in a dog the subject of this disease.[a] Finally, Dr. Stephen Mackenzie considers a shiny homogeneous condition of the liver and spleen as the next most common *post mortem* appearances to the phthisical changes already alluded to.[b] Pavy states that the bile usually resembles rhubarb mixture. In two cases, both ending by coma, which I have seen, the gall bladder was once empty, and once contained about ℞ xx. of normal bile. In a third case there was no abnormality observed.

TABLE VII.—*Spleen.* *No. of Cases*, 95.

Normal	61
Soft	7
Enlarged	6
Small	5
Hyaline degeneration of the arteries	5
Congested	4
Large and homogeneous	2
Small and hard	1
" and anæmic	1
Congested, smooth, and firm	1
Tubercle	1
Lardaceous[c]	1

In one of two cases which I have examined I have been unable to find the hyaline degeneration of the arteries which has recently been described as constant in this organ. It was present to a small degree in the other case. Dr. S. Mackenzie's statement has already been quoted under the heading of the liver.

TABLE VIII.—*Kidneys.* *No. of Cases*, 271.

Normal	115
Fatty, and more or less enlarged	35
Large and soft	19
Congested	18
Enlarged	14
Cirrhotic	10
Large and congested	9
" and mottled	8
Coarse	7
Enlarged, degenerated, and containing casts of various kinds	6
Tubercle	5
Carcinoma[d]	3

[a] Revue Vétérinaire for 1870–71–72. Arch. Gén. de Méd., Vol II. for 1878.
[b] Brit. Med. Journ. Supra cit.
[c] History of old syphilis.
[d] Rokitanski (teste Lécorché). This is not mentioned in Seegen's account of Rokitanski's autopsies.

Containing cheesy masses	2
Large and coarse	2
Anæmic	2
Suppurative nephritis[a]	2
Cortex pale	2
Cloudy swelling of epithelium	2
Containing ecchymoses	1
Calculous Pyelitis	1
Enlarged, pale, with purulent foci	1
Enlarged, firm, anæmic, with dilated pelves	1
Diminished cortex	1
Scrofulous nephritis	1
Soft and hyperæmic	1
Amyloid	1
Softening of cortex	1

The enlargement of the kidney, which is so frequently met with, is to be expected in an organ whose duties are so much augmented. For some time the enlargement was almost the only feature noted, save Prout's observation that the diabetic kidney exposed to the air became of an orange colour. Of late much more attention has been devoted to its internal structure. According to Ebstein, necrosis of the epithelium of the tubes, and hyaline degeneration of Henle's loop,[b] are to be discovered. To the former of these statements more recent observers take exception, Frerichs[c] considering that Ebstein's appearances are mainly due to the use of imperfect re-agents. On the other hand, in an appendix[d] to Frerichs' paper it is shown that in all cases of diabetes glycogen may be found deposited in the epithelium of Henle's loop. Sanders and Hamilton found fat emboli in one case; this has, however, been already spoken of under the heading of the lungs. I have examined four kidneys microscopically—one of these was normal; two showed extensive fatty degeneration; in the fourth the epithelium was granular and swollen, especially in the convoluted tubes. In some tubes were masses of broken-down epithelium; in others granular *débris;* others, again, contained blood corpuscles, and in a few there were bodies somewhat resembling hyaline casts; but though possessing their solid appearance, they lacked their

[a] In one case following stricture of urethra.

[b] Ebstein. Deutsche's Archiv. Bd. 24 (*vide* Frerichs).

[c] Op. sup. cit. Pp. 30–31, note 2.

[d] Op. sup. cit. Anhang i. "Ueber das Vorkommen von Glykogen im diabetischen und im normalen Organismus." By Prof. Dr. Ehrlich.

translucency, and were more granular.[a] I did not examine any of them for glycogen.

TABLE IX.—*Pancreas. No. of Cases*, 139.

Normal	65
Atrophied	38
„ with fatty degeneration of cells	11
Changed to fibrous band	5
Atrophy from calculi in duct	3
Malignant disease	3
Cloudy swelling of epithelium	2
Calculi in duct, without atrophy	1
Fatty	1
Large and fatty[b]	1
Soft	1
Congested	1
Small well-marked lobules	1
Transformed to cystic pouch	1
Fatty, with dilated ducts	1
Dark coffee-brown[c]	1
Small hæmorrhages	1
Cretaceous	1
"Changed" (alteration not specified)	1

It will be seen from the above that in rather more than half the cases recorded the pancreas has undergone change. In the majority of cases this tends in the direction of atrophy, which ranges in degree from a mere diminution in bulk, through the stages of cirrhosis, to the extreme condition of complete degeneration into a fibrous band. However, we must not forget that almost identical lesions of this organ may be found in two cases, in one of which glycosuria is present, in the other absent. Instances will be found in Bright's paper[d] on disease of the pancreas, accompanied by fatty stools. It is curious to note that this symptom also is present in some cases of pancreatic disease—absent in others apparently precisely similar. I have examined microscopically four specimens. In two there was cloudy swelling of the epithelium; in both these cases the organ was smaller than normal, and both terminated by coma. In a third case, also terminating by coma, with milky blood, the pancreas was small and hard, and a section showed a quantity of fibrous tissue surrounding fatty and degenerated epithelium. In the fourth case the organ was

[a] Brit. Med. Jour., May 12, 1883.
[b] Doubtful fat. Glands in neighbourhood rather cheesy.
[c] Salivary, mesenteric, and retro-peritoneal glands similarly affected.
[d] Med. Chir. Trans. Vol. XVIII., p. 3.

represented by a fibrous band, and microscopic examination failed to show any trace of its normal constituents.

Table X.—*Stomach.* *No. of Cases*, 77.

Normal	52
Hæmorrhages	5
Chronic catarrh	4
Papillation and ulceration of mucous membrane	4
Vascular	3
Softening of mucous membrane	3
Thickening	2
Acute catarrh	2
Softening	1
Contained dark blood	1

Thickening of the mucous membrane, though only mentioned twice above, because in those cases it was the sole lesion, was found in several of the other autopsies as an accompaniment of some other change. A condition of distension with gas appears to be also very common.

Table XI.—*Intestines.* *No. of Cases*, 69.

Normal	51
Hæmorrhages	6
Tubercular ulceration	2
Peritonitis	2
Dysenteric ulceration	2
Opaque	1
Greasy [a]	1
Ulcerated (? enteric fever)	1
False membrane [b]	1
Catarrh	1
Thickening of mucous membrane	1

In two cases which came under my notice, both of which terminated by coma, large masses of tænia medio-canellata were found in the intestines. This fact may have more importance than at first sight appears to be the case, when we take into consideration the influence of the larger entozoa on the cerebro-spinal system.[c] After the injection of acetone into guinea-pigs, the following lesions were found constantly:—Hæmorrhages in pleura, a pale liver, acute fatty degeneration of the cortex of the kidney,

[a] Disease of pancreas; fatty stools.

[b] In large only; small, normal.

[c] Cf. passim. Heslop. On the Cerebro-spinal Symptomatology of Worms, especially Tape-worms. Dub. Quarterly Jour. of Med. Sci. Vol. XXVII., p. 275; and Vol. XXVIII., p. 133.

the mucous membrane of the duodenum thickened and rose-colour, and that part of the intestine distended with a paste consisting of serum and epithelium.[a] These lesions should be remembered when weighing the value of the acetonæmic theory of diabetic coma. In one case of coma I found sub-pleural and diaphragmatic hæmorrhages, and a small amount of bloody fluid in the pelvis, together with very numerous extravasations in the duodenum, becoming fewer, and finally ceasing in the jejunum. I did not observe any marked detachment of the epithelium in the alimentary canal, though it was desquamated from the bladder and vagina in excessive quantities, some of the flakes in the urine consisting of as many as forty cells.

TABLE XII.—*Bladder.* *No. of Cases*, 40.

Normal	20
Hypertrophied	13
Dilated without hypertrophy	3
Much epithelium detached	2
Ecchymoses	1
Cystitis	1

The hypertrophy so frequently met with in this organ can, of course, be explained on mechanical principles. With regard to other organs, the supra-renals have been recorded as enlarged in one case. I have not found any change macroscopically or microscopically in my cases. The ovaries have been described as atrophied in some cases, cystic in others. The following lesions require only passing mention:—Cataract, diseases of gums, alveoli and teeth, and carbuncles.

After reviewing the tables given above, one fact is most especially impressed upon us, and it is this—that we are not justified, from our present knowledge, in drawing any definite conclusion as to the pathogeny of diabetes.

Before we can do this it will be necessary to have records of a number of cases carefully tabulated as to the following particulars at least—cause, duration, mode of death, and *post mortem* appearances. As regards these last, as far as naked-eye appearances go, the line has been nearly worked out.

The discrepancies which are so marked a feature in the record of autopsies go to prove that most careful microscopic examinations of all the organs afford the only hope of detecting the characteristic lesion of this disease.

[a] Thudichum. Arch. of Chem. Med. Vol. II. "Diabetic Coma."

At present the position seems to be nearly this—either diabetes is a distinct disease, or it is not. In the former case we can scarcely believe that it has not some definite lesion, which up to the present has certainly not been discovered. If the latter hypothesis be true, we must learn to look upon it in the same light as jaundice, as a symptom which may be due to various causes and lesions.

Finally, it may appear that my tables are too prolix, and that the same condition is sometimes entered under two or more slightly different headings. My object, however, was to give the words of my authorities, leaving anyone who may see this paper to draw his own conclusions from it.

MALARIAL LARYNGITIS.

Dr. E. Briand having seen certain cases of false croup of no other than malarial origin, concludes that: 1. There exists a form of laryngitis due to malaria, characterised by congestion of the larynx, giving rise, from a symptomatic point of view, to the functional signs of true croup. 2. This variety of laryngitis differs from laryngismus stridulus by the symptoms, course, and prognosis, and generally yields to treatment by sulphate of quinine. 3. It is not very rare in infants, and may be recognised by the fact that it is preceded or followed by malarial manifestations.—*Revue Méd. Franç. et Étrang.*, May 26, 1883; and *Medical News*, July 7, 1883.

A COLONY OF ASCARIDES AS A CAUSE OF DEATH.

Dr. Egeberg (*Norsk Magaz. f. Lægevid.*, Third Series, Vol. XII, "Proceedings of the Norwegian Medical Society," and *Nordiskt med. Arkiv.*, Vol. XV., Part I., 1883) exhibited before the Norwegian Medical Society, a portion of intestine from a girl aged four years, who, when two years old had discharged a lumbricus in a bloody motion from the bowels. She had subsequently been healthy, except that off and on she had transitory pains in the abdomen. On the evening of the 11th of February she was attacked with violent pains in the stomach and incessant vomiting, but there was no evacuation of the bowels; she became collapsed, and died next morning, twelve hours after the occurrence of the first symptoms. At the autopsy evidences of peritonitis were discovered, and the terminal portion of the small intestine for about eighteen inches upwards from the valve of Bauhin (ileo-cæcal valve) was completely crammed with lumbrici. No other cause for the peritonitis could be detected.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Treatise on Insanity in its Medical Relations. By WILLIAM A. HAMMOND, M.D. London: H. K. Lewis. 1883. 8vo. Pp. 767.

THE volume before us, from the pen of Dr. Hammond, the well-known American neurologist, whose former works on Diseases of the Nervous System have gained for him a wide reputation, adds yet another to the numerous systematic treatises on Insanity which already occupy the book-shelves of the alienist physician. As the *raison d'être* of the present work, the author states that he considers the term insanity has hitherto been applied in an altogether too restricted and illogical manner; that as it is now universally acknowledged "that all normal mental phenomena are the result of the action of a healthy brain, and that all abnormal mental phenomena likewise result from the action of a diseased or deranged brain, so the latter should be included under the designation of 'insanity,' as the former are embraced under the term 'sanity.' There can be no middle ground, for the brain is either in a healthy or an unhealthy condition. If healthy, the product of its action is 'sanity;' if unhealthy, 'insanity.' Many of these departures from normality are known only to the sufferers themselves, and would in nowise constitute them legally insane. There are very few people," he considers, "who have not at some time or other, perhaps for a moment only, been medically insane," as he puts it. "And it is time, therefore, that the horror of the word should be dissipated, and that the fact should be recognised and acted upon, that a disordered mind is just as surely the result of a disordered brain as dyspepsia is of a deranged stomach; that a scarcely appreciable increase or diminution of the blood-supply to the brain will lead as surely to mental derangement of some kind as an apparently insignificant change of the muscular tissue of the heart to fat will lead to a derangement of the circulation; and that in the one case there may be a hallucination, a delusion, a morbid impulse, or a paralysis of the will, just as in the other there may be an intermittent pulse, a vertigo, or a fainting fit.

There is no more disgrace to be attached to the one condition than to the other." To some of the states of mental aberration which are thus, he thinks, properly to be classed as insanities, the author now endeavours to draw attention, to point out their clinical features, and to indicate the treatment proper for them. This he considers to be the first systematic attempt in this direction, and adds that some of the forms—though many physicians will recognise them as old acquaintances they have met with in their practice—are now described for the first time. Dr. Hammond writes, of course it should be said, from the standpoint of a non-asylum physician, and necessarily, therefore, bases his personal experience chiefly on the closely-studied cases he has seen in consultation, or which have come under his observation at his clinique in a general hospital; and though we are quite prepared to believe, and readily concede the fact, that many of his observations are original, and to the point, yet in such a book as this much of its contents must, of necessity, be but the recapitulation—in other words, and in a different style, it may be—of the descriptions and records of those who have been the pioneers in this department of medical science, and whose works have long been regarded as classics in the literature of the profession. Dr. Hammond divides his book into four sections. In the first he deals briefly with the "General Principles of the Physiology and Pathology of the Human Mind," following the line taken by Dr. Maudsley in the first editions of his well-known work, and, like him, is a trenchant advocate of the modern doctrines of mental physiology. For example, in criticising a passage from the writings of M. Simonin, one of the most recent of the anti-physiological psychologists, he says:—"Mind is not a fluid secretion to be compared to the gastric juice. It is a force produced by nervous action. As a galvanic battery evolves galvanism, so the brain evolves mind. If the battery be good, the galvanism is good; if the battery is bad, the galvanism is bad. If the gas is good, we get a good light; if the gas is bad, we get a bad light. And if the brain be good, the mind will certainly be good; and if the brain is bad, the mind will just as surely be bad. As no two persons ever looked exactly alike, it would be the height of absurdity to expect that any two hearts, or livers, or stomachs, or brains would be alike." This passage clearly shows that Hammond regards the brain as the organ of the mind, as clearly as he regards the stomach as the organ of digestion, and it is upon this basis that the entire work has been constructed. In

the first section the author treats of the influences of Eccentricity, Idiosyncrasy, Genius, Habit, Temperament, Constitution, Hereditary Tendency, Age, Sex, and Race, on the mental qualities of those possessed of these characteristics, dwelling on each of them separately and concisely, and noting the best means to be taken to counteract the possibly morbid states they may contribute to produce if allowed unfettered sway. Section II. is devoted to the consideration of the Nature and Seat of Instinct. The etymology of the word "instinct" shows conclusively the meaning which should properly be attached to it. It is formed from the two Greek radicals—*εν, in;* and *στιζειν, to prick.* According to its derivation, instinct is the product of excitations, the stimulus to which is applied from the interior—that is to say, the result of impressions received from within. The third section, which we consider the most original and interesting in the entire volume, deals with Sleep and Dreams, both healthy and morbid, and is, to a great extent, reprinted from the author's work on "Sleep and its Derangements," originally published in 1869. Hammond strongly supports the theory now daily gaining ground, that sleep is directly caused by the circulation of a less quantity of blood through the cerebral tissues than traverses them while we are awake; this, he says, is the immediate cause of healthy sleep, the exciting cause being the necessity for repair. He readily and cheerfully yields to Mr. Durham the credit of being the first to support this theory by a series of carefully-conducted experiments and observations, though his own researches in this direction were of a prior date, but published later, and brought him independently to the same conclusions; Mr. Durham's experiments and his own are then detailed, and numerous observations adduced in support of the doctrine above enunciated. In discussing, further on, the state of the mind during sleep, he concludes that the three great divisions—the Emotions, the Intellect, and the Will—are differently affected thereby:—

1. Feeling, embracing sensation and emotion, is suspended, so far as the first is concerned, but is in full action as regards the second. We do not see, hear, smell, taste, or enjoy the sense of touch in sleep, although the brain may be aroused into, and we may awake through, the excitations conveyed to it by the special senses. The emotions have full play, unrestrained by the will, and governed only by the imagination.

2. The will or volition is entirely suspended.

3. The thought or intellect is variously affected in its different powers. The imagination is active, and the memory may be exercised to a great extent, but the judgment, perception, conception, abstraction, and reason are weakened, and sometimes altogether lost.

The physiology of Dreams is then dealt with, and much curious and interesting information afforded. The author is of opinion that dreams are directly caused by an activity of the cerebral circulation over that which exists in profound sleep. This activity is probably sometimes local, and at others general, and never equals that which prevails in the condition of wakefulness when the functions of the brain are at their maximum of energy. Finally, morbid dreams are considered, and amongst them nightmare, the immediate cause of which is the circulation of blood through the brain which has not been sufficiently aerated. In cases of oft-recurring and periodic nightmare he recommends bromide of potassium in twenty to forty-grain doses three times a day, in addition to hygienic measures, and the endeavour to break up the habit by having the sufferer awakened before the hour at which the paroxysm comes on. The fourth section, embracing naturally more than a moiety of the volume, deals with the Description and Treatment of Insanity. The definitions of the term proposed by numerous authors are quoted, and for himself Hammond regards insanity as "a manifestation of disease of the brain, characterised by a general or partial derangement of one or more faculties of the mind, and in which, while consciousness is not abolished, mental freedom is weakened, perverted, or destroyed." An essential feature of this definition is that it is directly the result of a diseased condition of the brain. This is the immediate cause, and may consist of structural changes due to injury, disease, or malformation; or malnutrition, the result of excessive intellectual exertion, the action of powerful emotions, irritations in distant parts of the body, the sudden stoppage of the digestive process, the introduction into the system of certain drugs, such as opium, alcohol, belladonna, &c., the retention in the organism of substances poisonous in character, but which in health are excreted, as some of the constituents of the bile and of the urine, and of other factors capable of altering the quantity or quality of the blood circulating through the cerebral vessels, or of accelerating or retarding the metamorphosis of tissue which the brain undergoes in common with all the other organs of the body.

The classification of insanities follows, those recently proposed by Kraft-Ebing and Spitzka being quoted in their entirety. To these Hammond adds yet another, and as it is the index, so to speak, to the author's clinical descriptions, we think it well to give it at length, as follows:—

"I. Perceptional Insanities.—Insanities in which there are derangements of one or more of the perceptions:

a. Illusions.
b. Hallucinations.

"II. Intellectual Insanities.—Forms in which the chief manifestations of mental disorders relate to the intellect, being of the nature of false conceptions (delusions) or clearly abnormal conceptions:

a. Intellectual monomania with exaltation.
b. Intellectual monomania with depression.
c. Chronic intellectual mania.
d. Reasoning mania.
e. Intellectual subjective morbid impulses.
f. Intellectual objective morbid impulses.

"III. Emotional Insanities.—Forms in which the mental derangement is chiefly exhibited with regard to the emotions:

a. Emotional monomania.
b. Emotional morbid impulses.
c. Simple melancholia.
d. Melancholia with delirium.
e. Melancholia with stupor.
f. Hypochondriacal mania or melancholia.
g. Hysterical mania.
h. Epidemic insanity.

"IV. Volitional Insanities.—Forms characterised by derangement of the will either by its abnormal predominance or inertia:

a. Volitional morbid impulses.
b. Aboulomania (paralysis of the will).

"V. Compound Insanities.—Forms in which two or more categories of mental faculties are markedly involved:

a. Acute mania.
b. Periodical insanity.
c. Hebephrenia.
d. Circular insanity.
e. Katatonia.
f. Primary dementia.
g. Secondary dementia.
h. Senile dementia.
i. General paralysis.

"VI. CONSTITUTIONAL INSANITIES.—Forms which are the result of a pre-existing physiological or pathological condition, or of some specific morbid influence affecting the system:

a. Epileptic insanity.
b. Puerperal insanity.
c. Pellagrous insanity.
d. Choreic insanity, &c.

"VII. ARREST OF MENTAL DEVELOPMENT:

a. Idiocy.
b. Cretinism."

In common with the numerous other systems of classification which have been from time to time proposed, this classification possesses many inherent weaknesses, which the author readily admits, but which we cannot now stay to dwell upon. Suffice it to say, that any system of classification based upon the grouping of sets of symptoms, which may vary in direction from day to day, or upon different mental functions, which may become successively and rapidly involved in the break down, can be useful only in so far as they, for the time being, ticket certain groups of symptoms with names. But they can never convey an adequate idea of a complex malady which is scarcely ever sufficiently circumscribed to admit of its being definitely throughout its course included in any one single division or under any one name, which most frequently embraces many, and requires, therefore, at different stages during its progress to be labelled as it were with a different name, presenting the symptoms of melancholia, it may be, to the physician who may observe it at one period, and those of acute mania, perhaps, to another who may see the case later on. The chapters which immediately follow are devoted to the consideration of the varieties of Mental Derangement contained in the above classification; these we must pass lightly over, merely remarking that the descriptions are concise and practical, if at times lacking fulness and breadth, being based mainly on the close study of individual cases drawn from private practice, rather than on generalisations deduced from the observation of large numbers of cases collected together in public asylums. The text is interpolated with the records of many interesting and typical cases either originally observed by the author himself or culled from the writings of other well-known physicians. In discussing perceptive insanities Hammond strongly supports the view held by Luys, Crichton Browne, and others, that the optic thalami are the centres for sensorial impressions,

and that to irritation in and around them hallucinations are to be ascribed. In the section on "Epidemic Insanity" much curious information regarding the so-called "Demonomania," as it occurred some two or three hundred years ago, is afforded, drawn mainly from an old work by Boguet, quoted by Calmeil in his "History of Insanity." The concluding chapters of the book are occupied with the Causation, Diagnosis, Prognosis, Pathology, and Treatment of Insanity. In the section on Prognosis prominence is given to the controversy, if it may be so called, which took place between Dr. Pliny Earle and Dr. Ray on "The Recoveries from Insanity" (*vide* Reports on Nervous and Mental Diseases in this Journal); and Dr. Hammond considers that Dr. Earle's data are "sufficient to destroy the little vestige of confidence existing in regard to asylum statistics;" and we may, perhaps, here observe that the tone of the author's feelings towards asylum treatment and asylum superintendents, at least in his own country, is decidedly hostile. While declining to offer any opinion for or against, we think it is to be regretted that Dr. Hammond should have indulged, in such a volume as the present, in a criticism on American asylums which, under the circumstances, can hardly be otherwise than personal to those officially connected with such institutions, many of which can hardly deserve the severe strictures passed upon them generally. The chapter on the Pathology and Morbid Anatomy of Insanity appears to us to go a step beyond what the facts of the case warrant. With the different varieties of mental derangement previously described, certain alterations in the structures of the brain are associated, more or less distinctive and characteristic in each. This differentiation of structural lesions in relation to the mental symptoms is hardly borne out by the researches of the most accurate observers, who have not yet succeeded in definitely associating certain morbid alterations, with certain groups of symptoms, in the more ordinary forms of insanity, the microscopical findings often varying greatly, and bearing but little relation to the changeable condition of the patient during life, while in many instances the products found are not really morbid, but are rather caused by artificial *post mortem* alterations, or, if morbid, are the results of long-continued functional disturbance, instead of being the causes of such disturbance of function. The definite histological changes which have been ascertained beyond all doubt to exist in the brains of the insane are, except in the case of general paralysis, meagrely and insufficiently described—as, for instance, the different

forms of degeneration of the nerve corpuscles; and we note the omission of the names and researches of such men as Mierzejewski, Herbert Major, or Bevan Lewis, foremost observers in this field of labour. As to treatment, the author adds but little to already existing knowledge. As hinted above he objects, on principle, to the placing of insane persons in asylums, if such a course can in any way be avoided, and expresses the opinion that residence in the domestic circle of a physician is the best plan to adopt in individual cases. This, when feasible, may be highly beneficial to the patient we doubt not, but we fear that the opportunities where it can be carried out successfully occur so seldom that the numbers of cases of admissions to asylums will be scarcely influenced thereby, and that such institutions must continue to be an absolute necessity. As regards purely medical treatment, the various drugs which have been introduced from time to time are passed in review. Dr. Hammond's experience does not differ greatly from that of others who have had opportunities of observing their effects.

In conclusion, we believe we may fairly say that the volume, though written to a certain extent for a purpose and in a spirit of partisanship, is a sound and practical treatise on the subject with which it deals, and though by no means as exhaustive as many other works on insanity, yet contains a great deal of information carefully selected and put together in a pleasant and readable form; and emanating, as it does, from an author whose previous works have met with a most favourable reception, will, we have little doubt, obtain a wide circulation.

The Medical and Surgical History of the War of the Rebellion. Part III., Volume II.—Surgical History. Prepared under the direction of JOSEPH K. BARNES, Surgeon-General, United States Army. By GEORGE A. OTIS, Surgeon, United States Army, and D. L. HUNTINGTON, Surgeon, United States Army. Washington: Government Printing Office. 1883.

THIS third part of the Surgical History of the War of the Rebellion appears under great disadvantages in consequence of the untimely death of the author, who had begun and so nearly completed his task, and from the fact that the vast size and range of the work is such that even had its author lived to finish it, this last volume comes so long after the time of the war it deals with—nearly twenty years—its facts would appear to want the interest of

novelty. The many books and magazine articles published independently in America during the last fifteen years have been based on these facts in many instances, and so the principles it teaches have become already familiar; but in spite of all these disadvantages the volume will remain unrivalled.

We cannot pass to the examination of its details before we express our sense of the ability and skill which Surgeon D. L. Huntington has shown in the completing of the work sketched out for him by his illustrious predecessor, George A. Otis, whose loss Europe as well as America deplores.

Some of our readers, looking to the statement we have just made—that this volume is mainly conversant with facts nearly twenty years old, may be inclined to pass the book by as already out of date. That such an idea may not arise in any one's mind, we would direct attention to the fact that throughout the text is furnished with bibliographical notes and commentaries which form a review of modern surgery of the most complete character. The great library of the surgeon-general's office, which has grown with the production of the several volumes of this history, medical and surgical, has supplied for this purpose the materials; we can only say that the authors, past and present, have proved themselves masters in the art of historical compilation. Anyone who desires an easy, ready and complete book of reference on any surgical subject relating to injuries, has but to turn to this and find the work ready cut and dry before him.

The present volume deals with Wounds and Injuries of the Lower Extremities (Chap. X.), Miscellaneous Injuries (Chap. XI.), Wounds and Complications (Chap. XII.), Anæsthetics (Chap. XIII.), Medical Staff and Materia Chirurgica (Chap. XIV.), and, lastly, Transportation of the Wounded (Chap. XV.). Under these heads are placed the statistics of special injuries of the highest surgical importance, and the general surgery of wounds—Hæmorrhage, Tetanus, Gangrene, Erysipelas, Pyæmia, with the discussion of the guiding principles in the application of conservative surgery to injuries, or the adoption of excision or amputation. To review all that relates to these subjects or those contained in the three last chapters would, if it were adequately done, occupy more than our pages have space for in one, or, indeed, several numbers; we indicate the subjects treated of chiefly for the benefit of those of our readers who may not know the range of the work before us and its value as a book of reference.

Its size and weight—over three-quarters of a stone—render it difficult of circulation, as it more than doubles the weight allowed by our postal regulations for books. To have some idea, therefore, of the contents of each volume may be a convenience.

As in the previous volumes the illustrations are most admirable—the photographic particularly.

The parts of greatest interest to the practical surgeon in this volume are those which treat of the relative mortalities of expectant treatment, amputation, and excision in shot wounds of the extremities. It must be borne in mind that although shot wounds possess characters to some extent peculiar, their peculiarity does not separate them from wounds in general to such a degree as to render the conclusions deduced from their study inapplicable to the injuries of civil practice; they rather agree with the gravest of the civil injuries in character, and of necessity are included among them, too often at times; their study, then, is all-important for the civil as well as the military surgeon.

The vast numbers from which the statistical conclusions are drawn minimise the errors which are of necessity included in them, and render them the most complete and valuable of any we possess. The analysis of 174,206 shot wounds of the extremities furnishes the best possible means for supplying answers to the questions which arise to the surgeon's mind when placed face to face with a grave compound fracture of a limb:—Whether to abstain from operation, to amputate, or excise the damaged bone or joint? what should be the seat of election in amputation? and, lastly, what are the prospects of success? To all these questions the tables in this volume indicate the answers.

Of the total number of shot wounds of the extremities, 174,206, the number of cases submitted to amputation was 29,426; 4,656 were treated by excision, and 140,124 were treated without operation.

Putting aside the less defined groups of injuries, the injuries complicated by fractures of bone numbered 60,266. Of these 26,467 were treated without operation, with a mortality of 17·9 per cent.; 4,656 by excision, with a mortality of 27·5 per cent.; 29,143 by amputation, with a mortality of 25·8

"The greatest fatality after shot injuries of the extremities with lesion of bone was observed in shot injuries of the hip-joint, where the fatality reached 84·7 per cent. Next came the injuries of the knee-joint, with a mortality of 53·7 per cent.; then those of the thigh, of which 52·4 per

cent. perished. Then come the injuries of the shoulder joint, with 34·2 per cent. mortality; of the leg, with 27·0; of the ankle-joint, with 26·9; of the arm, with 20·7; elbow, with 19·4; wrist, 12·9; forearm, 9·4; foot, 8·3; and finally, the shot injuries of the bony structures of the hand, with 3·1 per cent. fatality."

The figures we have quoted show "a percentage highly flattering to the efforts of conservation—*i.e.*, expectant treatment; but it must be borne in mind that the cases reported as treated conservatively were cases selected as specially adapted to this mode of treatment, and probably were the least serious. Moreover, there were many cases in which conservative treatment was abandoned and intermediary or secondary excisions and amputations were resorted to—cases which helped to increase the mortality rate of these operations, but which should properly be charged to the attempts at conservation. On the other hand, many operations were performed on the field, where the appliances and necessary rest of conservative surgery could not be had, and where frequent transportation for considerable distances was unavoidable, in which in general hospitals an attempt might be made to save the limb. The disposition toward conservation developed itself rapidly as medical officers became familiar with serious cases of shot injuries, and it is safe to say that in the later stages of the war many limbs were saved which at an earlier period would have been sacrificed. Especially was this the case in the upper extremities, where the preservation of the hand or even of portions of the same was considered most important for the well-being of the individual. An examination of the many cases thus treated, as described in previous sections of the history, will show the formidable risks taken to attain this end. There was a decided growth in the disposition to save in shot injuries of the lower extremities, especially in those of the femur, and many favourable results leave beyond doubt the wisdom of the course. Still there was a wide difference of opinion on this point, particularly between field surgeons and those in charge of general hospitals at the rear—a difference that can only be reconciled by viewing the subject from the standpoint of each.

"Probably the least satisfactory ultimate results of conservative treatment were those in the foot and ankle, which, while successful in saving life, render it doubtful, in the light of their ultimate condition, whether conservation was the wisest course."

It will be observed that these remarks apply to the expectant treatment as contrasted with the adoption of either excision of the bones or joints, or of amputation—a point essential to recollect in considering them—because the term "conservative" has been commonly applied to excision, as compared with amputation.

The relative value of excision and amputation, as illustrated by

these statistical returns, is also most important, for the numbers dealt with are the largest recorded from a single source, and probably furnish the best means of forming a fair estimate. Of necessity the bulk of the operations in each class are primary; for this reason the results are not entirely comparable with those derived from civil practice, while the conditions under which the patients are treated in active warfare render the prospects of excision less hopeful than amputation, for rest is much more essential for success in the treatment by excision than it is for amputation.

Bearing these differences in mind, we may pass to the numbers and the conclusions deduced from their study.

The excisions recorded are 4,656, with a mortality of 27·6 per cent.; the amputations are 29,980, and their per-centage of mortality is 26·3.

The following table gives the per-centage of mortality of the several operations:—

	Amputation.	Excision.
Upper Extremity—		
Hand and Fingers	2·9	9·6
Wrist-joint	10·4	13·8
Forearm	14·0	11·3
Elbow	7·6	23·0
Arm	23·8	28·6
Shoulder	29·1	28·6
Lower Extremity—		
Foot and toes	5·7	19·3
Ankle-joint	25·1	29·0
Leg	33·2	28·2
Knee-joint	57·5	81·4
Thigh	54·2	69·4
Hip-joint	83·3	90·9

"With the exception of the operations in the bones of the forearm, and those in the bones of the leg, the excisions are uniformly followed by larger percentages of fatality than amputations, the excisions of the knee-joint especially showing an exceedingly large excess in the mortality rate over the amputations at the knee. The favourable results after excisions in the bones of the forearm and leg are due to the fact that, in many of those cases, only portions of one or the other of the two bones comprising them were excised, thus lowering considerably the percentage of fatality of the operation."

Again—"The percentage of fatality of the entire series of excisions in the extremities is disappointing, especially when it is considered that over four-fifths of the excisions were performed in the upper extremities, where the chances for success must be considered the brightest. It disproves the opinion held by the advocates of this operation, that excision involves less loss of life than amputation. That it might be possible to obtain better results in well-appointed and less-crowded hospitals is not denied; and the many excellent results obtained in civil practice should encourage the military surgeon to persevere in his efforts in suitable cases, and under favourable circumstances. As to whether the effort made to secure a useful limb by excision compensates for the formidable risk which must be encountered in military practice, can be best determined by the reader by an examination of the analyses of the cases in the various sections of the extremities, as given previously under their appropriate headings. In brief, it may be stated that the results after excisions in the long bones, and in the knee and ankle-joints, were little less than disastrous, and the ultimate conditions of many of these cases, although considered successful shortly after the operation, proved to be deplorable."

The concluding sentences of this passage express very clearly the general results of this comparison and the deductions which must be made on account of the difference of military and civil practice. We are much inclined to think, if any statistics similar in accuracy, and of like extent, could be got for civil practice, the results would not widely differ. The extreme mortality of primary excisions of the knee, and the remarkable success of amputations through the elbow-joint, form the chief irregularities in the series of which we have quoted the figures in detail. Whatever be the explanation of the reported success of the lesser operation, there appears to be no doubt of the truth of the statement that the knee excision, as a primary operation, is "disastrous." We have directed attention to only a very limited part of this volume, but we hope sufficient to show its practical value, aud the great lessons in surgery it contains. Its great size, and the variety of its matter, prevent us, in the space at our control, taking more than a single illustration of its merits. We shall, however, have done our duty if we succeed in directing the attention of our readers to the great importance of careful reference to its pages as a guide to the treatment of injuries of the extremities,

RECENT WORKS ON PHYSICAL EXAMINATION.

Auscultation and Percussion; together with other Methods of Physical Examination of the Chest. By SAMUEL GEE, M.D.; Fellow of the Royal College of Physicians, London; Physician to Saint Bartholomew's Hospital, and to the Hospital for Sick Children. Third Edition. London: Smith, Elder, & Co. 1883. 8vo. Pp. 344.

A RIPENED acquaintance with this well-known text-book of physical examination of the chest leads us to the opinion that it is one of the best of its class which has ever issued from the press. Sixty-seven years have elapsed since Laennec may be said to have discovered auscultation, and few—if any—members of the medical profession can now be found who would deny the paramount importance and utility of this and kindred methods of physical examination. To quote the words of one of Dr. Gee's predecessors at St. Bartholomew's Hospital—words which he prefixes to his work—

> "Teque auscultantem, palpantem, et percutientem
> Pectora, sic morbi ducere signa vident." [a]

Admitting, then, that a practical knowledge of physical examination is indispensable to the physician, it only remains for us to determine whether Dr. Gee is a safe and reliable guide in the pursuit after such a knowledge. At the outset we may say that the arrangement of the book has been much improved by transferring from the head of each chapter an analysis of its subject-matter to a table of contents at the beginning. We may also congratulate Dr. Gee on having, in some brief introductory remarks, substituted an intelligible, if not a very accurate, definition of "Physical Examination" for the following abstruse sentence in the first edition:—"Those properties of matter, which are recognised by the science of physics, constitute the objects of Physical Examination."

The book is divided into two parts—the first dealing with physical signs considered in the abstract—the pure science of the physical signs; the second dealing with them in relation to their subservience to the discovery of disease—the applied science of the physical signs.

Dr. Gee correctly describes the method of examining a patient as follows:—"The physician first of all carefully surveys the chest

[a] E Carmine Roberti Bridges de nosocomio Sti Bartolomaei Londinensi.

with his eye, this is Inspection; next, with his hand, this is Palpation; he next strikes the chest, Percussion; and lastly, he puts his ear to the chest, Auscultation." But we are not prepared to admit with the author that "the physical examination of children is not more difficult than that of older persons; and *the method in all cases is the same.*" Certainly, in children of tender years, it is desirable to reverse the order of examination and to auscultate before percussion is practised; otherwise, a crying fit is only too likely to interfere with the further examination of the frightened patient.

In contrast to Chapter I., which occupies only one page of the book, Chapter II., on "Inspection," runs to 42 pages. It is very well done, and the simplicity of the diagrams of the shape of the chest in health and disease is worthy of all praise. We observe that Dr. Gee does not admit that diastolic cardiac impulses, whether due to sudden relaxation of the ventricles or to sudden closure of the pulmonary sigmoid valves, are ever *visible.* But in exceptional cases, where the left lung is retracted, a diastolic impulse in the pulmonary area may not only be felt, but seen.

Chapter III. deals with "Palpation;" Chapter IV. with "Percussion." In the latter, the theory of percussion is ably discussed. We were specially struck with the following sentences—"Sounds, which are wanting in tone, may, for the sake of distinction, be called Noises." "The prime property assigned by Skoda to a percussion sound, its fulness or its *leerness* (ideas adopted from Laennec), is, in fact, a compound perception, made up chiefly by the duration of the sound." The author explains that Skoda's word "leer" ("empty," or "scanty") needs no translation, for it is English as well as German, and bears the same meaning in both tongues (see Halliwell's Archaic Dictionary: "Leer, or Lear"). "The somewhat more highly-pitched tones I have proposed to call 'Subtympanitic,' thereby to keep up the traditions of Auenbrugger; it is the note usually yielded by healthy lungs, in their natural state of distension; the pulmonal note of Piorry."

"Auscultation," discussed in Chapter V., naturally occupies a considerable portion of Part I. Having given a brief historical sketch of the subject, the author describes the methods of auscultation, and the instrument by means of which mediate auscultation is practised—namely, the stethoscope. The respective merits of the three principal forms of stethoscope in use are succinctly stated thus—"To sum up: a binaural flexible stethoscope conducts all

sounds more loudly, but many sounds less truly; a solid stethoscope conducts all sounds less loudly, but many sounds more truly; a rigid tubular stethoscope stands as it were midway."

We are quite of Dr. Gee's opinion that a flexible stethoscope is chiefly serviceable when we have to "auscult" bedridden patients who cannot well be raised, and that "this is its only use."

In the case of so well-known a text-book, it is not necessary to analyse all the contents. We will, therefore, merely add that in Part II. the physical signs of the different affections of the pulmonary organs are systematically described and explained.

How to Examine the Chest: being a Practical Guide for the Use of Students. By SAMUEL WEST, M.D., M.R.C.P.; Physician to the City of London Hospital for Diseases of the Chest; Medical Tutor and Medical Registrar of St. Bartholomew's Hospital; Assistant-Physician to the Royal Free Hospital. London: J. & A. Churchill. 1883. Pp. 190.

A SAFE and useful guide for students in acquiring a knowledge of the mode in which the physical examination of the chest should be conducted, and of the use of the facts thus arrived at in diagnosis. The work is altogether a practical one, all theoretical considerations being omitted. It contains a number of diagrammatic illustrations, and although devoid of originality in either matter or arrangement, will prove of much assistance to beginners.

RECENT WORKS ON MATERIA MEDICA.

Syllabus of Materia Medica, based on the Relative Value of Articles and Preparations in British Pharmacopœia. By ALEXANDER HARVEY, M.D., and ALEX. DYCE DAVIDSON, M.D. Sixth edition. London: H. K. Lewis. 1882. Pp. 55.

THE effort which this little work—now in its sixth edition—represents is one that is worthy of commendation. It is an attempt to apply the principle of selection in assisting the student in the study of materia medica. With this object the relative value, in the opinion of the authors, of the several articles and preparations of the pharmacopœia are indicated by the numbers 1, 2, 3, 4; and certain of the more important of these are still further distinguished by special marks attached to them. There can be little doubt but that it is better for the student to master the essential features of any

subject—especially when his period of study prior to being examined in such subject is limited—than to burden his mind with a mass of details, a large portion of which may be practically unimportant. Dr. Harvey points out that the General Medical Council has given its approval to such a scheme, and it would seem desirable for the development of this principle that teachers and examiners should, as far as possible, fall in with it, as by their doing so the student would be more likely to master its essential features. We observe that so excellent an authority as Dr. Lauder Brunton has, in the new edition (1883) of his useful " Tables of Materia Medica," adopted, to a great extent, the main principle of Dr. Harvey's " Syllabus," and has thus shown his appreciation of its value.

Materia Medica: a Manual for the use of Students. By ISAMBARD OWEN, M.D.; Lecturer on Materia Medica and Therapeutics to St. George's Hospital, &c. London: J. & A. Churchill. 1883. Pp. 191.

DR. OWEN has previously shown his skill in arranging some of the dry facts of materia medica, in his useful and well-known "Tables of Materia Medica"—a work which has passed through five editions in eight years.. These Tables, in a revised form, are incorporated in the present manual, which gives an outline of all the officinal preparations of the British Pharmacopœia, and of some of the most important non-officinal ones also.

The subject-matter is arranged in sections, which are subdivided into groups, and thus the student is presented with the several parts of his study of the materia medica in a manner in which it may be readily comprehended and, if necessary, committed to memory. Thus, under Section II.—Drugs furnished directly by the vegetable kingdom—we find twenty-one groups, classified according as the drugs are procured from flowers, buds, leaves, &c. The officinal preparations are described at the end of each group, and in addition, in the case of the drugs furnished by the mineral kingdom, the physical properties of the members of the group are described, and the chemical changes that occur in the manufacture of the different preparations are represented by equations placed at the foot of each page.

The synopsis of the doses of the B. P. drugs and preparations and of the leading non-officinal drugs is well arranged, as is also that of the compound preparations of the Pharmacopœia. While the work puts forward no claim to be a treatise on materia medica,

or to supplement systematic works on it, we feel sure that it will prove of great assistance to the student in "getting up," if not in mastering, this very essential part of his professional studies.

The Causation of Sleep. By JAMES CAPPIE, M.D. Second Edition, re-written. Edinburgh: James Thin. 1882. Pp. 207.

IN dietetics we find that *bulk* is an important element in the digestibility of food; and in medical literature, also, it would seem that the nutrient matter sometimes requires to be padded out with innutritious literary cellulose to insure deglutition and assimilation. In this little volume on the Causation of Sleep we plodded through ninety pages—not without feeling that there was a subtle connexion between them and the title of the work—before we came to the chapter in which the author's views are set forth at length. What these are may be gathered from the Preface. The balance of the encephalic circulation is different in sleep and during waking hours; the arteries and capillaries of the brain containing less blood, and the veins of the pia mater proportionately more, in the former condition than in the latter. This difference is the result of two causes—firstly, the "influence of nutritive changes on the capillary circulation, the brain when active requiring more blood than when at rest: and secondly, the effect of atmospheric pressure in retarding the circulation in the encephalic veins. So far as I am aware, physiologists are now unanimous in supposing that the state of sleep is accompanied by a diminished brain circulation. Instead, however, of regarding the encephalic circulation to be simply altered in its balance, the more general opinion seems to be that there is a diminution of the whole mass of blood within the skull, and that compensation is got by the amount of cerebro-spinal fluid being increased. Against this view very serious objections may be urged. I believe it is consistent neither with the physics nor the physiology of the intra-cranial organs."

In the eighth chapter, which contains 44 pages, these propositions are discussed in detail, and an excellent case is made out. It is known that in sleep the brain tends to withdraw from the inner surface of the skull, thus exercising "a certain amount of suction force." This force cannot be exerted upon the cerebro-spinal fluid, the vertebral canal being completely protected from atmospheric pressure. It can act only on the blood in the veins, the flow of which will thereby be retarded. "Less blood will circulate in the

arterial and capillary vessels of the brain, and to an exactly corresponding extent more must be held by the veins." The ophthalmoscope yields additional evidence of the comparative congestion of the cerebral veins during sleep. The retinal circulation shows such differences in the sleeping and waking conditions as our author's theory demands for the circulation in the brain. In an appendix (F.) a case of coma is given in which ophthalmoscopic observations were made, and in the frontispiece we have illustrations of the fundus as it appeared in the waking and in the comatose states.

In the other appendices the older views on the causation of sleep are fairly stated. On the whole, Dr. Cappie's book, though tedious and somniferous, is well worthy of the notice of physiologists, and his views will probably be accepted.

Practical Lessons in Elementary Physiology and Physiological Anatomy for Schools and Science Classes. By D. M'ALPINE, F.C.S. London: Baillière, Tindall, & Cox. 1883.

THIS work consists of twelve plates illustrating the principal objects met with in the dissection of a human body and that of a rabbit. Each plate is accompanied by explanatory text, and practical directions for dissection and the performance of some simple experiments. We have no doubt that the book will be found useful to teachers and students of elementary biology.

Meade's Manual for Students Preparing for Medical Examination. Fifth Edition, entirely rewritten. By JAMES CANTLIE, F.R.C.S., Charing Cross Hospital, and DANIEL COLQUHOUN, M.D., Lond., Charing Cross Hospital. London: Henry Renshaw. 1883. Pp. 508.

THIS manual, or "production," as its authors would term it, comprises sections on Anatomy, Chemistry, Chemical Physics, Botany, Materia Medica, Pharmacy, and Therapeutics, Forensic Medicine, Midwifery, and Hygiene. On its face it professes to be a "cram;" and the apology offered for its publication is the existence of the present system of examination and the short duration of study in English medical schools, which, it is stated, is "now practically limited to two and a half years." The work is similar in concep-

tion to the "Students' Aid Series," "Test Series," "Quiz Compends," and other works of the same class which are unfortunately so popular at the present day, and against which this Journal has always set its face on the ground of the injury they do to *bonâ fide* education. It is but fair, however, to state that with regard to anatomy, which is the first subject detailed in the manual, it is acknowledged that the incomplete enumeration of facts given is only of the most meagre kind; and the student is warned against reading such an imperfect compendium with the idea of learning anything more of anatomy than that which is clinically useful or upon which it is required to refresh the memory. The same caution ought to be given as regards the other parts of the manual, which, however, as far as they go, appear to have been compiled with care. Naturally the statements made are brief, but as a rule they are accurate. When "Medicine" is discussed in 131 pages, not much space can be given to diseases of any individual organ. We were surprised nevertheless to find valvular disease of the heart and its treatment disposed of in a page and a half, six lines only of which are devoted to the subject of mitral incompetence. It is not therefore to be wondered at that reference to the important sign of accentuation of the second cardiac sound in that disease is omitted. In the Materia Medica part, under Tinctura cocci (page 263), we find the extraordinary statement that its dose is "30 mins. to 1½ drs.," and that it is "used as a rubefacient, irritant, and diuretic in inflammations, nervous affections, and urinary diseases." This must be an error, as even in the days of Dr. Paris the employment of cochineal in nervous diseases was discredited, and we never heard of its being used for any of the other purposes indicated. No mention is made in the manual of its colouring properties. We should not approve of the administration of tincture of cantharides as a diuretic "in internal inflammations," however useful the authors may have found it in "nervous disorders."

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. BANKS, M.D.
General Secretary—W. THOMSON, M.D.

SURGICAL SECTION.

President—JOHN KELLOCK BARTON, M.D., President R.C.S.I.
Sectional Secretary—WILLIAM STOKES, F.R.C.S.I.

Friday, May 11, 1883.

The PRESIDENT in the Chair.

MR. WM. STOKES, Sectional Secretary, read the minutes of the previous meeting, which were confirmed.

Living Specimens and Specimens by Card
Were exhibited by the PRESIDENT, MR. CROLY, DR. BAXTER, MR. THOMSON, MR. WHEELER, DR. MAPOTHER, MR. STOKES, MR. COPPINGER, and DR. M'CULLAGH.

Papers—1. *Excision of the Hip;* 2. *Replantation and Transplantation of Teeth.*

1. The PRESIDENT read a paper on excision of the hip. He pointed out that surgeons are much divided in opinion as to the benefits derived from this operation—some, seeing the results so often unfortunate, holding that amputation of the hip is in extreme cases better than excision; others, including those who have had most experience of the operation, clinging to the belief that in excision we possess the means of saving those cases of hip disease which will not yield to expectant treatment. In two cases he obtained an encouraging amount of success—a year having elapsed since the first operation and six months since the second.

CASE I.—L. M., aged fourteen, a delicate, strumous girl, with sinuses round the diseased hip, from which there was copious suppuration, was

evidently sinking from the effects of the disease when the operation was performed in May, 1882. A marked improvement in her general condition followed the operation. She was able to leave hospital in three months for the country, where she has remained since. She is able to walk with crutches, but there are still open sinuses, as evidence of the existence of carious bone, but the union between the cut end of the femur and the acetabulum is firm and capable of bearing the patient's weight without pain.

CASE II.—M. R., a healthy-looking girl, aged twelve, the subject of recurrent disease in the trochanter major. The hip was ankylosed when she was seven years old, in the semi-flexed position. Disease had lately been set up in the trochanter by a fall. The operation was undertaken to remove the progressive caries of the trochanter and to rectify the ankylosis, which rendered her a cripple. It was performed in October, 1882, and has been successful in accomplishing both objects, as the girl is now able to walk and the limb is straight, though four inches shorter than the other.

The author insisted on the importance, in the after-treatment of these cases, of maintaining a free drain from the wound, submitting that the accomplishment of this must be the first care of the surgeon.

DR. R. M'DONNELL said his experience of excision of the hip-joint was not altogether favourable; at the same time the operation should not be set aside. He believed it was legitimate in suitable cases.

MR. STOKES remarked that in the Richmond Hospital their experience of excision of the hip-joint had been neither very great, nor very favourable. In one case in which he had performed the operation the result was the reverse of satisfactory; but it was in every respect an unfavourable case. Had he had his own will at the time he should, on performing the excision, and finding the large amount of disease that was present, have proceeded to amputate the hip-joint, but he was precluded from so doing by the express directions of the patient. He mentioned this to show how difficult it was beforehand to form a just estimate of the amount of disease that might be present. In dealing with caries of other articulations this was not altogether the case. He asked the President's opinion with regard to Thomas's splint, which he used in one of the cases. Having tested the splint himself according to the inventor's directions in the case alluded to, he was obliged, after a few days, to remove it, owing to the great pain caused by the pressure of the splint against the spine. He substituted Liston's long splint with a weight attached. The President being a warm advocate of antiseptic treatment, Mr. Stokes asked why he abandoned it in favour of the so-called open treatment of wounds?

MR. BENNETT said the same question struck him as that which Mr. Stokes had just asked, and the answer might be almost anticipated—that the conditions under which the President operated were not those

in which the Listerian treatment could be adopted, being cases in which there was already an open suppurating wound existing for some time. But a more important question than the immediate detail of treatment was one on which he desired explanation. The difficulty in those cases was to determine the conditions under which the operation was likely to succeed. He heard it laid down in the debate at the International Medical Congress that, as a rule, the operation should not be undertaken except under conditions where the alternative was amputation of the hip. He thought amputation should take precedence. He asked the President, however, what he regarded as the indications for the operation—whether it was a mere alternative to amputation of the hip, or whether it should be adopted under such grave conditions?

Mr. Corley, referring to the question of age in determining the operation, mentioned the case of a patient, aged thirty-six, in whom all the conditions for a favourable result existed—a limited amount of bone disease, while the operation itself was not attended with considerable difficulties. It was impossible, however, to secure anything like immobility. He did not use the wire apparatus recommended in Sayer's work, but put up the patient in Bryant's double splint, and endeavoured to carry out antiseptic treatment. The difficulty was great, as a large abscess surrounded the joint. But the unfortunate result depended on the complete impossibility of securing anything like rest to the fragments in position. Modern success depended more on securing perfect immobility than on antiseptics, and until some means were had to secure this desideratum the operation must be looked on as a serious one.

Mr. Wheeler asked what was the condition of the acetabulum? His own experience in five cases of the operation was that it was favourable to life. In three the results were very favourable, but two still had sinuses. The splint he used was Bryant's, with a posterior splint running up behind on the nates. The treatment he adopted was open dressing with plenty of drainage. He believed in antiseptic treatment, but not in Listerism. With the observation of Mr. Stokes that it was more difficult to determine the amount of disease in the hip-joint than in any other he disagreed. In the knee it was equally difficult. It was a great point that the sinus did not open posteriorly. In those cases that turned out well he made an opening below and drew the drainage tube through, to be able to syringe from the top and prevent any collection of matter.

Mr. Thomson said the discussion showed that the experience of surgeons in and out of Dublin was very disastrous in connexion with the operation of excision of the hip. Even Mr. Barton, who had the largest experience of the operation of any surgeon in this country, had only been able to bring forward one case out of nine that he could claim as a success, and in that case the patient was unable to progress without the

aid of crutches and unable to bear the weight of the body. He had done the operation himself in one case which he was looking after for Mr. Stoker during his illness, and in that case, after a long period of illness, the patient gradually sank and died. He thought the great practical point to be decided in the discussion was the proper time at which the operation should be commenced, if it was to be undertaken at all. There was no doubt the operation of excision of the hip-joint was very little more fatal than leaving those cases alone—that is, as regards those that had a fatal result. A considerable proportion recovered. In the *Medical Press and Circular* he saw that the per-centage of fatal cases that were not treated at all was almost 40, while the fatal results from excision numbered more. So that practically there was very little difference between interfering by excision and leaving the patient alone. He had an opportunity of seeing a case treated by the Listerian method in St. Thomas's Hospital, London. An abscess had formed, and the disease was very rapid in its progress. The case came under the care of Sir William MacCormac, who at once determined to excise; and cutting down upon the part he found the bone was diseased, but that the disease had not proceeded to such an extent as was usually the case before the operation was undertaken. In that case the wound remained perfectly aseptic throughout. The patient had been operated on six weeks before he saw the case. The wound was perfectly healed at the time, while the patient was able to get out of bed and stand on both limbs without the aid of a crutch. That was a point which went to prove two things—the great importance of early operation in those cases if there was to be any hope of success at all, and the great advantage which must always follow the adoption of the true Listerian method.

The President replied. He agreed with Mr. Stokes's experience that Thomas's splint was singularly unsuited for cases of excision, the pressure of the rigid bar down the back of the hip not being at all comfortable; in the cases in which he used it he had to lay it aside. Thomas's splint was, however, useful for recovering hip disease where the patient could be allowed to move about. Replying to Mr. Stokes's question, he adopted the open treatment, having first tried various other methods, including the Listerian, but he did not find it to answer well. Indeed, the conditions were such as should have enabled him beforehand to say it would not answer well. Why? Because the excisions were only partial ones, unlike the excision of joints where all the diseased portions were removed, as in the elbow or knee, and where the healthy cut parts could be closed against one another; but where there was partial resection the result was bone remaining in a partly diseased state behind and the soft parts in a very unhealthy state. Thus there was a large cavity through which the products of inflammatory action must be discharged. His experience fortified him in saying what all would agree

was reasonable in theory, that the free exit of drainage from the wound was the first thing to be gained. He, therefore, thought the open treatment necessary to gain that desideratum. Having reported one of these cases some years ago, it was remarked on that occasion that the constant syringing with antiseptic solutions—chloride of lime, carbolic acid, &c.—the constant washing away of the discharge was in itself antiseptic treatment. While the method of closing wounds in which the flesh might unite by primary union was inapplicable here, yet the great principle of removing putrefactive material remained the same, though carried out in another way. Therefore he was not casting the slightest slur on the antiseptic method, but adopting the suitable way of applying it to cases of partial excision. It appeared from the discussion that they ought to aim at osseous union in excision of the hip. That was not his experience. They should simply aim at fibrous union as supplying in successful cases all the results they could possibly wish—complete firmness with mobility. For this purpose it was not so necessary that absolute rest of the parts should be maintained, and the apparatus he applied had to be laid aside, and he fell back on the simplest possible method of keeping the limb straight. Sir William MacCormac's case was an exceptional one; but ordinary cases of a strumous type commencing in the trochanter towards the head, involving the joint in the secondary degree, were not suitable for excision in a very early stage, for the simple reason that a great number of them would recover by expectant or ordinary treatment. Therefore, the surgeon must wait until the abscess had formed or the disease had entered into what was called the secondary stage. In this case the question might arise whether amputation or excision ought to be preferred. Amputation at the hip-joint was open to this objection—that it was a greater shock to the patient than the operation of excision. No doubt it was difficult to say how far the disease had progressed, but he would not perform that operation when he could by any reasonable section of it gain recovery and a tolerably useful limb. It was better for a child to have one limb some inches shorter than the other, and useful, rather than have none at all and cut off at the hip-joint. Mr. Corley had asked what age was favourable. He agreed with Mr. Corley that as age advanced the risk increased, but his own cases were all of young children. Replying to Mr. Wheeler's inquiry, as to the condition of the acetabulum, in most cases he said it was not very bad; there was no necrosis of the bone. The cartilage was destroyed, but the bone itself or the ilium was not extensively diseased. He looked on the femur as more of a difficulty than the acetabulum. Mr. Thomson had taken a gloomier view of the results of excision than was necessory, for damaging as the results had been they were not so gloomy as he had pictured. The young man, for instance, was able to hop on the diseased limb, bend it, abduct it, flex it,

and rotate it. That was a very successful case. The second was also successful, as fibrous union was established. The time for operation must be when the case had passed recovery from expectant treatment and before degenerate changes had begun. As pointed out by the Clinical Society in London the percentage of recoveries was considerably above that of recoveries without operation.

2. Dr. Theodore Stack read a paper on the replantation and transplantation of teeth. This subject, he stated, was first worthily introduced into surgical literature by John Hunter, in whose museum there is to be seen an immature canine transplanted into the comb of a cock with perfect success. Having fallen into disuse soon after Hunter's time, this method of treatment received a fresh stimulus from the practice at St. Bartholomew's of Mr. Coleman; and more recently Professor Magitot of Paris had made a valuable communication on the subject to the International Medical Congress. Replantation may be found a useful therapeutic measure in—first, pulp exposed or nearly exposed with carious cavity extending under the gum; secondly, external violence knocking the teeth out; thirdly, accidental extraction; fourthly, obscure cases of neuralgia referred to sound teeth; fifthly, alveolar abscess complicated or uncomplicated. It will be undertaken most frequently in cases of alveolar abscess. The primary cause of alveolar abscess is, in nearly every case, a putrefying pulp; a secondary cause may be a small portion of the tip of the root becoming necrosed by the abscess after it has lasted a little while, dissecting off from the part the periodontal membrane. Magitot proposed extraction of the tooth, resection of any necrosed part, and the replantation, and claimed a success of 92 per cent. Mr. Finlay Thompson proposed after resection to cap the end of the root with gold and to introduce a gold tube into the root for drainage. This method seems equally elaborate and useless. Mr. Coleman proposed to fill the root antiseptically. This method appeared to fulfil the indications most fully, and some of Mr. Coleman's failures must be attributed to his dipping the tooth in too strong carbolic acid before replacement. Out of a table of some thirty cases made out by Mr. A. W. W. Baker and Dr. Stack from their private and hospital practice—all of which were successful—a large number had been treated by resection of the root, filling the root with creasote and iodoform, and free incision into alveolar abscess. Referring to the liability of these teeth to absorption—a danger mentioned by Tomes, Coleman, Nilhod, and others—Dr. Stack stated he believed this danger only applied to teeth which had been so treated when out of the mouth as to cause death of the periodontal membrane, either by too long delay or by the use of some too strong chemical agent. It was not due to rending of the alveolar connexions, for admittedly teeth violently knocked out and quickly replanted nearly

always succeeded; nor was it due to placing foreign material in the pulp chambers and canals, for Dr. Stack was proud to say that in cases of teeth pivoted by two of their oldest dental surgeons—Mr. Robert Moore and Mr. Daniel Corbett—it was no uncommon occurrence for the roots to last twenty or thirty years. In the museum of the Dental Hospital of Ireland there was a specimen of a pivot tooth presented by Mr. Corbett which had lasted thirty-seven years. In the allied operation of transplantation, when the scion tooth was always perfect, it is still undecided whether the pulp should be exterminated or not. Mr. A. W. Baker, Mr. Abraham, and Dr. Stack were, he believed, the first who had established by actual microscopical examination in the human subject that the pulp chamber in the scion tooth could after replantation again enclose living contents. This was a possible, perhaps a probable, result, but by no means a universal one. Dr. Stack believed that the operation of transplantation was likely to grow in favour, especially in hospital practice, where the patients were unable to pay for good artificial dentures. Dr. Stack said he was much indebted to Mr. Abraham and Dr. Richard Hayes for the assistance they had given himself and Mr. Arthur Baker.

Mr. Abraham read a short treatise on the subject.

Dr. R. M'Donnell said the paper was one of extraordinary interest, not only to the dental surgeon, but also to the surgeon occupied in the careful study of the processes engaged in the absorption of bone and diseased tissues. Savory, referring to Gulliver's paper on the absorption of bone, had asked—Was dead bone absorbed? He came to the conclusion that, according to Gulliver's experiment, if dead bone was lying in the midst of surrounding tissues it was not absorbed. But his experiments extended only for a short time, while absorption was a very slow process of years. Pressure was of importance. For instance, when allowed to make experiments in this country, an ivory peg put loosely through a bone, and taken out after a few weeks, was just as smooth as when hammered in; but when taken out after being there for months it was deeply eroded, and it was evident that some process was going on. Ollier pointed out that bone when engaged with a foreign body was able to regenerate new bone or attack structures that came in the neighbourhood of it, and he demonstrated the rapid development of new bone by transplantation into the bone of a chicken. From the cases in question, however, he (Dr. M'Donnell) would be most cautious in drawing the conclusion that it was revived pulp. It might be that granulations had sprung up and filled the cavity, that the tooth was acting like a sponge-graft, and, therefore, would be in the happy position of bearing a pulp without any nerve in it. He did not think anyone who had heard the paper could scout the idea of antiseptics.

Mr. Wheeler said he had brought forward a paper in which he had

strongly advocated antiseptics, laying down, however, the difference between antiseptic surgery and Listerism. Anything that fell short of the gauze and the spray, as MacCormac had stated, was not Listerism. But he believed in drainage, in rest, in cleanliness, what they all aimed at. As to ivory pegs being absorbed, he had seen them five or six times pegged into the tibia. Holes were bored and the pegs put into the wood in the first instance to make sure they would not get small. It was not the experience of many surgeons that ivory pegs were absorbed.

Closing Remarks.

The PRESIDENT, in closing the meeting, thought they might congratulate themselves on the work of the past session. The papers read showed an amount of preparation that was in the highest degree encouraging, while the remarks made in discussing those papers evidenced knowledge and depth of thought that equally augured well for the future. A suggestion made in the Council might perhaps be carried out next session—to group subjects so as to have two or three papers on the same subject read at the same meeting, and let these be discussed together. That course had been found to work well elsewhere and to add very much to the interest of the meeting. The living specimens exhibited during the session had proved a most successful feature. To the General and Sectional Secretaries thanks were due for their admirable arrangements.

OBSTETRICAL SECTION.

President—JOHN DENHAM, M.D.
Sectional Secretary—WILLIAM C. NEVILLE, M.D.

Friday April 27, 1883.

DR. ATTHILL in the Chair.

DR. WILLIAM NEVILLE, Sectional Secretary, read the minutes of the previous meeting, which were confirmed.

Prolapse of the Uterus from an Ovarian Tumour.

REV. DR. HAUGHTON, F.R.S., read a communication from DR. W. C. ASHE on a remarkable case of protrusion of the uterus by a large ovarian tumour. The case had occurred in Dr. Ashe's practice close to Kandy, on the Island of Ceylon. The patient was a Singalese woman, aged twenty-six, of low stature, married and the mother of two children, the younger being six years old. She was stated to have presented the appearance of being in the family-way for over three years. The abdominal enlargement began below and increased steadily upwards. Two

months before she was seen by Dr. Ashe the uterus began to protrude. Œdema of the legs soon afterwards was noticed. On being first seen her condition was as follows:—The abdominal cavity was filled and immensely distended by a large, smooth-surfaced tumour, which fluctuated freely all over upon palpation. The skin covering the tumour was tense, glistening, and marbled by superficial veins. The heart's action was fast and feeble; the lungs were œdematous and the legs œdematous. The uterus was protruded completely, its fundus overlapping the os, and its cervical part pressed tightly against the pubic arch. The measurements of the abdominal tumour were:—From pubes to umbilicus, 10 inches; from umbilicus to ensiform cartilage, 10 inches; from umbilicus to either anterior superior spine, 12½ inches; girth at umbilicus, 43 inches. The surfaces of the prolapsed uterus exposed to friction were denuded of epithelium and ulcerated in parts. Its cavity measured 3 inches in length. The lips of the os were thickened, eroded, and everted. On tapping, 295 ounces of ovarian fluid were drawn off, and the large cyst collapsed, but it was found impossible to replace the uterus, in consequence of an apparently solid and partially fixed cyst which remained in the pelvis obstructing the vagina. Another tapping was performed three months afterwards, and 105 ounces of thick, brown fluid were withdrawn. The pelvic part of the tumour was then found greatly enlarged. Ten days subsequently the patient died of exhaustion. The rarity of prolapse of the uterus caused by the growth of an ovarian tumour was the chief point of interest in the case.

Dr. Macan said he had seen a case in many respects similar to that recorded by Dr. Ashe, the uterus having been protruded by the pressure of an ovarian tumour. After tapping he was unable to replace the organ. The dense pelvic adhesions which evidently existed in Dr. Ashe's case must have contraindicated ovariotomy.

Dr. Atthill and Dr. More Madden also spoke.

Rev. Dr. Haughton observed that the Singalese women were all very small, so that the tumour appeared to him to have been relatively a very large one.

The Nervous Diseases of Women.

Dr. More Madden read a paper on the nervous diseases peculiar to women. To none should the ætiology and treatment of such diseases be of more concern than to practitioners who were daily witnesses of the effects of utero-ovarian irritation in the victims of hysteria, or who had to deal with the many-sided forms of cerebral disturbance connected with pregnancy and parturition. The greater prevalence of nervous complaints in women than in men—the greater importance of the several functions in the ætiology, as shown by the correspondence between their increase and that of the gynæcological disorders—consequent on the

more complex organisation of the female reproductive system, the predominant influence of this being manifest in every vital action, from the dawn of puberty until the menopause. The commencement of this period was marked by a sudden and complete revolution in the female, mental as well as physical, constitution, and at each succeeding monthly ovulation there was a coincident recurrence of constitutional and nervous disturbance. Hence few women whilst menstruating could be said to enjoy the *mens sana in corpore sano* in perfect integrity. When menstruation had become established and was regular in every respect the accompanying nervous disturbance might be so slight as to be almost imperceptible; but the earlier catamenial periods, and every subsequent deviation from normal menstruation, as well as the menopause, were always attended with some manifestation of hysteria. Under these circumstances the experienced practitioner would be prepared to meet with the reflex effects of utero-irritation acting through the widespread ramifications of the sympathetic and vasomotor systems in the guise of every physical complaint and mental disorder. In all such cases, however different in other respects, the characteristic features of hysteria—namely, perverted nervous excitability, whether lowered, as in hysterical anæsthesia, or exalted, as in the more common forms of hysterical hyperæsthesia, and the suspension of the normal nervous influence were discernible. It would be obviously impossible to do more here than refer to some of the most important nervous troubles associated with utero-ovarian disease. Hysteria and hystero-epilepsy in their relation to uterine disorders having been discussed, the author said he never met with any form of epilepsy in females which was not associated with some disorders of their sexual health. From his experience he did not believe that uterine displacements were as important in the ætiology of these diseases as menstrual disorder. Amongst the symptoms of impending epilepsy he dwelt upon hysterical delusions as generally preceding the epileptic seizure, and on the still more frequent illusions following it. He mentioned the case of an epileptic patient who stated that her seizure was ushered in by a sensation as if she had received a violent blow on the occiput. Unconsciousness immediately succeeded, and during her recovery from the paroxysm it was only by degrees that she could shake off the impression. Such post-epileptic illusions might possibly become of serious medico-legal interest. Thus a recent case of alleged assault, which had sorely puzzled the ingenuity of detectives and journalists, might perhaps have been better elucidated by a medical man conversant with the phenomena of hysteria. Pseudocyesis, hysterical trance, hysterical paralysis, and hysterical insanity having been successively discussed, Dr. More Madden said some psychological writers admitted that there was an unquestionable connexion between the catamenial suppression and the subsequent or coincident mental disorder.

He instanced one case in which the patient from the age of puberty was in a state of mental incoherence, owing to the suppression of the catamenia. One day, on rising from bed, she ran and embraced her mother, exclaiming, "I am well." The catamenia had just flowed spontaneously, and her reason was immediately restored. It had been abundantly demonstrated that mental derangement was not necessarily or even generally accompanied by any tangible pathological condition of the brain. Therefore, in many cases at least, the physical lesions connected with the causation of insanity must be sought elsewhere. In countless instances it might be traced to disordered menstruation or puerperal septicæmia affecting the vascular condition and functional activity of the brain. Indeed in the majority of cases in gynæcological practice there was the clearest evidence that reflex irritation from disease or irritation of the reproductive system was the *fons et origo* of the mental disorder. The author dwelt on the fact that insanity in women had become doubled in frequency during the last 25 years, and ascribed this to the increase of uterine disease. He related some remarkable cases of hysterical insanity which were cured by the ultimate recognition and treatment of uterine disorder. There was no doubt whatever that among the 50,000 female patients now secluded in lunatic asylums, there were many cases of supposed incurable insanity which were really only the reflex results of unsuspected uterine disease, and by the recognition of which they might be restored to mental as well as physical health. The most obvious illustrations of influence in the causation of mental and nervous disorders were those so familiar in obstetric experience—namely, puerperal insanity and puerperal eclampsia. The non-physical or moral causes of mental disorders in women were of great practical importance—first, the misdirected or neglected mental and moral training of female youth; secondly, the premature or undue stimulation or abuse of the sexual functions; and thirdly, the increasing tendency to alcoholism, which was asserted to be now an almost universal evil in every class of modern society, and the physical and moral effects of which were daily brought under medical observation in the mental and nervous disorders peculiar to women. Erotomania and nymphomania having been briefly referred to, the author described the general treatment of the various forms of hysterical disease associated with uterine complaints. Local treatment should be avoided as far as possible, and only resorted to when indispensable. Amongst the better classes, hysterical complications and uterine disorders were most manifest, especially in those whose minds were unoccupied by any useful pursuit, whose passions were stimulated by pernicious literature, and whose diseases were fostered by over-nutrition. In such cases, at the risk of having his advice rejected, the physician should insist, as far as possible, on exercise, temperance in diet, and healthy occupation of mind as well as body. When the nervous

disturbance in any instance was associated with disordered menstruation this function must be if possible restored to its normal condition. When the nervous or mental derangement was obviously traceable to the abuse or premature stimulation of the reproductive organisation, the medical attendant must, however unpleasant the task, point out clearly and impress on his patient the mental and physical evils which follow the undue stimulation or abuse of the sexual functions.

The Rev. Dr. Haughton, Drs. M'Swiney, Bennett, J. A. Byrne, Corley, and the Chairman having spoken on the subject of the paper,

Dr. More Madden briefly replied.

The Section then adjourned.

Friday, May 25, 1883.

The President in the Chair.

Exhibition of Specimens.

Dr. J. M. Redmond exhibited the heart and aorta of a male patient, aged fifty, who had died in the Mater Misericordiæ Hospital on May 14th. There were three small aneurisms of the ascending portion of the arch of the aorta, with great enlargement of the heart and general atheroma.

Dr. Redmond also exhibited an example of Farre's tubercle of the liver.

Dr. Macan exhibited an ovarian tumour which he had removed in the Rotunda Hospital that morning. The walls of the tumour were extremely friable and densely adherent in every direction. The adhesions were so vascular as to require a great number of clip forceps to restrain the hæmorrhage during the operation. A Keith's drainage tube was introduced after a very tedious and difficult operation.

Dr. Macan also exhibited a large subperitoneal fibroid, removed after death from the body of a woman who died in the Rotunda Hospital on the 12th day after delivery. The tumour was attached towards the fundus, and, being free from pressure, had given rise to no untoward symptoms during labour, after which its existence was first diagnosed. There was no *post-partum* hæmorrhage, the site of the tumour being remote from that of the placenta. Childbed was healthy until the occurrence of fatal symptoms, which only preceded death by a few hours. *Post-mortem* examination showed that death resulted from mitral stenosis, with œdema of the lungs, and hæmorrhage into the pleura and pericardium.

Dr. Kidd stated that he had attended one lady in several confinements, each of which was complicated by the presence of a large mass of subperitoneal fibroids. In none of her labours had hæmorrhage followed delivery, but there was always great collapse. The danger of such

tumours depended almost entirely on their site; if low down they were liable to pressure, and might gravely obstruct labour. They might then be lifted out of the pelvis by the use of water-bags distended within the rectum. He had employed this device in many cases with complete success. Dr. Beatty had recorded a singular case, in which the tumour had been spontaneously lifted out of the pelvis during labour. Such an occurrence, however, was very exceptional. If the obstructing tumour could not be lifted up, the case became an extremely anxious one, and might even necessitate the resort to a Cæsarean section. Subperitoneal tumours did not often interfere with *post-partum* contraction of the uterus. Hæmorrhage he had rarely seen in such cases, though he had always taken the precaution of administering ergot during the labour.

Dr. Atthill had observed 14 or 15 cases where fibroid tumours had existed during labour, while he was Master of the Rotunda Hospital. In most of these cases there had been no *post-partum* hæmorrhage, and in others it had not been of a serious character. In one patient labour and childbed had been quite natural, although her uterus was studded all over with tumours, varying in size from that of a small cocoa-nut to that of a filbert. He thought that in such cases the dangers attending labour and childbed had been overstated.

Drs. MacSwiney and Dill also spoke upon the case communicated by Dr. Macan, and narrated similar experiences.

Dermoid Cysts.

Dr. Macan read a paper on "A case of Dermoid Cysts of both Ovaries removed by Operation."

[The abstract of this paper has not been communicated.]

Dr. Atthill spoke, laying stress upon the importance of abdominal drainage after many cases of ovariotomy and similar operations. He thought that drainage tubes were not yet sufficiently often employed in such cases. Dr. Marion Sims had first insisted on the importance of such drainage, and pointed out the special indications for its use. In Dr. Macan's patient the timely resort to a drainage tube at a critical period had in all likelihood saved her life.

The President also spoke, mentioning the fact that very many years ago he had himself seen Sir J. Y. Simpson, after operating for the removal of a tumour, employ drainage through Douglas's *cul-de-sac* in order to combat symptoms of septicæmia which had supervened.

Dr. Macan briefly replied.

New Polyptome and Saw.

Dr. Neville (Sectional Secretary) exhibited for Dr. H. Macnaughton Jones a new polyptome and forceps saw, which combined the uses of a knife or saw with those of a forceps. Dr. Macnaughton Jones had pre-

viously exhibited at an earlier meeting of their Section a large fibroid tumour, in removing which from the vagina of a multipara with a midwifery forceps the perinæum had been unavoidably lacerated. Such cases were not rare, and must have presented themselves to many of their members. It was to meet the requirements of such cases that Dr. Jones had designed the instrument now exhibited. The forceps-polyptome was intended to be used after the tumour had first been detached by an ecraseur. By its use a large tumour situated in the vagina could be grasped, compressed, and cut into such sections as could be safely removed without endangering the soft parts of the woman during any stage of the proceedings. It consisted of a lightly-made forceps, by which the tumour was first grasped. In the lower part of the blades a groove was cut, and a movable sheath revolved over the simple pivot lock. Two cutting and one sawing blade might be used along with the forceps, each blade being made of such size as to slide through the sheath on the handles, and work safely within the grooves of the blades. One blade was shaped like a dagger, and is intended to pierce the compressed tumour and cut it through from within outwards; the other cutting blade is rounded at its extremity, and meant to cut from without inwards. The saw might be used in the same manner as the latter. If desirable, after the first section, the tumour might be caught and cut through in another axis, so that the mass could be easily removed piecemeal in a number of sections. Dr. Jones was also of opinion that this instrument would prove useful in some cases of craniotomy, in the same way as Van Huevel's forceps-saw.

Dr. Kidd considered that this instrument was likely to prove of much service in those cases for which it was more especially intended. He had operated on many cases in which he should have been glad to have it in his possession.

Dr. Atthill thought it might succeed in some cases after the tumour had been detached and was lying in the vagina.

Dr. Macan doubted whether the instrument would prove practically efficient. He did not consider the blades were sufficiently strong to cut through a large and tough tumour.

After some further discussion, Dr. Neville replied, and

The Section adjourned until next Session.

CLINICAL RECORDS.

Sir Patrick Dun's Hospital.—*Dermatological Notes.* By J. Magee Finny, M.D., Dub.; F.K.Q.C.P.; Physician to the Hospital.

I. ACUTE GENERAL URTICARIA IN AN ADULT.
II. SYPHILITIC ULCERATION OF THE FACE RESEMBLING LUPUS.
III. PSORIASIS TREATED BY CHRYSOPHANIC ACID.

Case I. *Acute Urticaria.*[a]

A. B., aged twenty-three, presented himself at the extern department on Saturday, May 5th, 1883, and being an unusual case was admitted under Dr. Finny.

This man has been drinking hard for the last three years. During this time and up to the day of admission his daily average has been ten pints of porter, but he is used to fifteen pints, and very seldom takes any other kind of drink.

About every week or fortnight he has attacks of trembling; finds it hard to sleep, and when he does go to sleep wakes up in a fit of terror. At dispensary yesterday (Saturday) his hands and tongue trembled very much, and he had not slept for three days. Last night he got five hours sleep, and to-day is much steadier and all trembling has left him—due to medicine and abstinence from porter.

On last Wedesday, 2nd inst., without any cause which he could suggest, or discoverable on full inquiry, he noticed hard blisters about his wrists, which were extremely itchy. The same evening they spread up his arms and appeared on his legs, and next morning they covered his whole body, even to his face. They came out singly or in patches. The single spots have all the appearances of hives, being hard, elevated white lumps, fairly circumscribed, and surrounded by a deep blush. The patches are elevated and entirely of a dusky-pink colour; they are not so hard or itchy as the single blisters, by the coalescence of which they are probably formed.

The upper eyelids, lower part of chest, nearly whole front of abdomen, palms of hands, and soles of the feet, are the only parts free. The largest patches are found on the chest and shoulders. The blisters on wrists and ankles are very characteristic hives.

At first sight the appearance of the face suggested erysipelas, from the

[a] From Notes taken by Mr. Edward Carrigan.

shade of red and swelling, but closer examination showed the urticarious nature of the eruption. The following is the distribution of the rash:—

Forehead—Separate spots and stripes, which are also on outer angle of both eyes, causing the eyelids to swell. *Face*—The wheals are few and discrete, and can be seen but not felt, unless when patient is heated; principally on right side and under jaws. *Neck*—Few; only along sterno-mastoid. *Chest*—Large patches over the pectorals, one about 3 in. square, near left shoulder. The areæ covered by them converge to a point on sternum between fifth ribs. *Abdomen*—None on front, but a tract of discrete blisters extends along each side, and thence over iliac and hypogastric regions. *Back*—Plentiful over shoulders, assuming various shapes, scarcely any in small of back, and scattered sparingly over rest in small discrete patches. *Buttocks*—A few discrete patches. *Arms*—Patches pretty large, but seem fading away. *Forearm*—Plenty of small well-marked wheals, very characteristic about wrists and on ulnar, front, and dorsal aspects. *Hands*—None on palms; there were some on dorsum yesterday, but they have now disappeard. *Thighs*—About as plentiful as on arms, but in small discrete patches, best marked in front. *Legs*—Resemble forearm; but patches are larger, more raised, and not so close together; better marked on shins than on calves, where they are scarce. *Foot*—Some single characteristic wheals on dorsum, none on sole.

The treatment was as follows:—May 5th. An alkaline bath for the itching—viz., Bicarb. soda, potash of each 3 ozs. in 30 galls. water, in which size was dissolved, and a sedative mixture containing brom. potass., chloral. hydrat., liq. opii. sed.

May 7. Most patches gone; some new ones on legs. Quiniæ sulph., gr. 16; acid sulph. dil., ʒss.; magnes. sulph., sodæ sulph. āā ℥i.; syr. zingiberis, ʒss.; mist. gentianæ ad. ℥viii.—℥ t. i. d.

The itching was never very severe, and was greatly relieved by the bath.

May 8th. Discharged, as no spots visible.

Urticaria, in a limited degree, is a very common affection, chiefly affecting the young, and can generally be readily traced to some error of diet, or to some external irritant. Hence it is a frequent concomitant of other cutaneous affections. It may be also induced by certain medicaments; but it is rare to meet it in so universal a degree in an adult, and in the absence of any special existing cause. It may be thought that the excessive indulgence in porter was sufficient to account for it, but if so, why did it occur at this particular epoch in a history of drinking largely for the last three years?

Of the typical features it presented as to the diverse sizes, shapes, and colour of the eruption, it is unnecessary to speak. The nature of the disease is to occur suddenly, to change its position, and to disappear and re-appear equally suddenly.

The treatment consisted of alkaline and size baths, and aperients combined with nerve tonics. Immediate good results followed, the large confluent wheals on the trunk being the last to disappear, and he was discharged well in three days, no return of the eruption having taken place.

CASE II.—*Syphilitic Disease of the Face.*[a]

R. W., aged fifty-four, a dealer from Clifden, Connemara, was admitted to hospital, November 13th, 1882, having been sent in by a medical practitioner as a case of lupus faciei. He suffers from inflammation of the right side of the face, including the eyelids, and of the nose, spreading across to the left side of the face. The right eye is much inflamed, and partly closed. The outer part of the right side of the face is marked by a smooth and firm cicatrix, extending down into the neck, which the patient says is the result of a burn received when young. The whole of the right cheek is engaged, but the nose is the principal seat of the disease, the right ala being deeply eaten into, and the right nostril almost occluded. On the left side of the face only the upper part of the cheek is engaged; on the surface are about half a dozen flattened pustules covered with a dirty thick crust; from these pus escapes on squeezing, and a small depression is left with sharply cut edges. The whole of the face involved is of a bluish red colour. There is *no pain*. The disease spreads by the skin becoming red, inflamed, and thickened, and the pustules afterwards breaking out on the inflamed surface. The patient states that no pustules appeared when the disease was progressing on the right side. Its progress is rapid; a fortnight only has elapsed since it attacked the left side, and already it has reached the outer angle of the eye.

There is no family history. The patient used to travel about the country, got good food always, and says he never drank. He positively denies ever having had syphilis. There are no scars to be seen in the throat.

The history of the attack is as follows:—About fifteen months ago, in August, 1881, he got inflammation of the right eye at the external angle from sleeping in a draught. He did not take any care of this, but still went about his business till last August (1882), when his eye became completely closed, and he went into hospital in Mullingar, where he remained for seven weeks. His eye was poulticed and got much better, and he left hospital with it open. While in hospital two months ago his nose also became involved, and the disease travelled rapidly. About four months ago the left nates became the seat of an eruption, which he describes as due to the irritation caused by his pack rubbing against his hip. A large area of skin in this situation is of a glazed appearance, of a light purplish colour, on which are situated several large scabs, while

[a] Notes taken by Mr. T. W. Swan.

beyond it is a flat white scar. This was not discovered when in hospital at Mullingar.

The constitutional treatment consisted chiefly of iodide of potassium and Donovan's solution, and local applications of linimentum calcis and carbolic oil, iodoform, and calomel, sublimed by Kane's tube, over the face. Under this treatment, and particularly the latter, the patient rapidly improved, and was discharged perfectly well from hospital on December 3rd.

Remarks.—The foregoing case presented some points of clinical interest both as to diagnosis and treatment. The diagnosis lay between lupus, tubercular syphiloderm, epithelioma, and scrofuloderma. The patient's age, the absence of other strumous disease and of lymphatic complication excluded the last, while epithelioma was also readily disposed of by the absence of the pain attendant on that disease, its circumscribed induration and everted edge, as well as of its other manifest evidences. The following were the points upon which the diagnosis was based that it was not lupus, and that it was an ulcerating syphiloderm, and that, in spite of the strongest denial of the patient of his ever having had the disease:—1. The patient's age, fifty-four, which is not incompatible with a tertiary syphilis, but is strongly opposed to the development of lupus, inasmuch as lupus usually begins in childhood. 2. The history is not that of lupus, which is very slow in its course, extending over many years it may be, while a month or six weeks is sufficient to produce the tubercles and ulcers of syphilis. 3. The ulceration in two or three of the spots on the left cheek was deep and excavated, and covered by scabs or crusts, which were thick and greenish. In lupus the crusts are red, and the ulceration is comparatively superficial. 4. The rapid extension of the disease during the last couple of months, without pain, and by the tubercles being preceded by inflammatory swelling, is against lupus. 5. The co-existence of a similar eruption on the left nates of but four months' duration, with a soft white scar in its neighbourhood, is strongly in favour of syphilis. 6. The strikingly beneficial effect of iodide of potass., and the liquor arsenici et hydrarg. hydriodatis, and of calomel locally applied, would have conclusively solved the question had any doubt existed.

CASE III.—*Psoriasis treated by Chrysophanic Acid.*

F. M'C., aged ten, was admitted on May 16th, 1883, under Dr. Finny's care. She has had psoriasis for the last three or four years; at first a few spots were limited to the elbows and knees, but the eruption spread afterwards to almost the whole body. It was principally in spots from the size of a split pea on the forehead to the size of a half-a-crown on the trunk. It was not diffused in any very large patches, but was very general. She had been attending the extern department off and on for several months, but when improvement took place her mother used to discontinue the treatment (which consisted in chrysophanic ointment, ʒ ss. ad. ℥i.), with

the result that while the spots were now not very scaly, they were far from being well, as the skin under them was thick and indurated from infiltration, and several spots of heaped-up scales appeared on the feet and forehead. Feeling sure that the child did not get fair play at home I took her into hospital, and placed her under the charge of an intelligent nurse, who carefully carried out instructions. The treatment consisted in the following:—After the bowels were opened liq. arsenicalis, in 5♏ doses, was given three times a day, after meals, and chrysophanic acid ointment (gr. 20 to ℥j.) was directed to be firmly rubbed into every spot.

Before this was done an important preliminary treatment by soap and baths was adopted. Soft soap was smeared on a firm pad of flannel, and well rubbed into each spot till the soap had disappeared, and the spot had assumed a bright red and angry aspect. Hot water was now added, and a copious lather produced. As soon as all had been cleansed with more water the chrysophanic acid ointment was firmly and forcibly rubbed in, and the limbs wrapped up in old linen.

This treatment was used everywhere except on the face, where the spots were few and fringed the hair. On the sixth day of treatment the larger spots on the shoulder, back, and loins had ceased to form scales, and were assuming that white colour peculiar to them when chrysophanic acid was about exercising its remedial effects. At this stage the appearance of the patient was unique and surprising to those who had not before seen this treatment carried out, for the healthy, unaffected skin became red-brown, while the diseased spots or patches changed from the red hue of psoriasis (when stripped of its scales) to a dull white, and were perfectly smooth, giving a strange mottled appearance where the spots were small and numerous, and resembling leucoderma in the larger and more isolated patches. The arms and legs resisted treatment longer, and it was not until the 3rd June that they were pronounced well. Altogether but 6 oz. of ointment, or 120 grs. chrysophanic acid, was used.

The child was given ordinary diet, including meat. There was no untoward complication, except a very slight conjunctivitis and puffing of eyelids; and this was due, in all probability, to the accidental conveyance of some of the ointment by the child's fingers, and should not be attributed to the so-called constitutional effects of the drug. There were no evidences to attribute them to the arsenic.

As a precaution, the child was kept in hospital for another ten days or fortnight, and continued the arsenic till she left.

Remarks.—The case illustrates the great importance of having the chrysophanic acid treatment conducted by an intelligent nurse, as well as the rapidity with which good results may be expected from its use in chronic cases. It should, however, be borne in mind that curing an attack of psoriasis does not cure the diathesis, and that, do what you will, the disease is liable to return again and again after a longer or shorter interval of complete freedom from it.

MEMORANDUM ON THE THREATENED APPROACH OF CHOLERA, JULY, 1883.

BY THE KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.

I. *Possible Importation of Cholera into the Port of Dublin.*

THE experience of past epidemics of cholera, and particularly of the outbreak of 1866 in Dublin, goes to prove that the disease is much more likely to be introduced from without by infected vessels entering the port than to arise independently within the city or its suburbs.

The Local Government Board for Ireland, acting as the Supreme Sanitary Authority in this country, have on the 16th of July, 1883, issued an order, making regulations with a view to the treatment of persons affected with cholera, and for preventing the spread of the disease, in conformity with the provisions of section 148 and certain other sections of the Public Health (Ireland) Act, 1878. And in this connexion it is necessary to remark that by section 150 of the said Act it is provided that the Board of Guardians of any Union within which, or within part of which, regulations relating to the spread of any formidable epidemic, endemic, or infectious disease, issued by the Local Government Board are declared to be in force, are to superintend and see to the execution of such regulations. Consequently, if section 149 of the Act is put in force, the Public Health Committee of the Corporation will be superseded, and some difficulty will certainly be experienced in transferring the sanitary organisation and machinery now at the disposal of the Public Health Committee to the Boards of Guardians of the North and South Dublin Unions.

The College observe with satisfaction that, as a precautionary measure against the introduction of cholera into the Port of Dublin, arrangements are being made for the inspection of all vessels arriving in the Liffey and at Kingstown and Howth, if known to come from a port infected by cholera.

The College are of opinion that the existing Port Hospital Ship, except as a temporary measure, is an inadequate and unsuitable provision against a possible invasion of cholera through the port. They think that an isolated intercepting hospital, containing at least twenty beds, should be prepared within a convenient distance of the river, to which patients suffering from suspicious diarrhœa, cholerine (cholera nostras), or cholera on board vessels arriving in the port, should be instantly removed. Abundant air space, free ventilation, an efficient system of warming, and

sanitary appliances of the most approved kind, should be provided in the intercepting hospital. These measures have proved successful elsewhere.[a]

II.—*Management of a Cholera Epidemic in the City.*

1. Should cholera become epidemic in Dublin, the General Hospitals should be invited to co-operate in coping with the outbreak; and, in case of need, section 155 of the Public Health (Ireland) Act, 1878, should be enforced, so as to enable the Sanitary Authorities, with the sanction of the Local Government Board, to provide for the use of the inhabitants of their several districts hospitals, or temporary places for the reception of the sick or convalescent, situated within reasonable distances of each other, and in open, airy spaces. The College consider that it would be undesirable to admit cholera patients to the wards of General Hospitals, in which those sick of other diseases were under treatment at the time; but they see no objection to the reception of cholera cases into detached wards specially erected on the grounds of such institutions.

It is essential that patients in the stage of reaction, and convalescents, should be removed as early as possible from the wards into which those lately attacked by the disease are being admitted. With a view of preventing delay in the admission of patients, all hospitals should be in communication with each other by telephone.

2. There can be very little doubt that the spread of infection is greatly augmented by the concealment of infective disease in tenement and other houses. It is to be feared that this deplorable state of things will continue until better provision is made to secure that early information of the occurrence of epidemic disease shall be furnished to the Sanitary Authority.

3. It is the bounden duty of the Sanitary Authorities to make *adequate* provision for the conveyance of infected sick who are without proper accommodation [Public Health (Ireland) Act, 1878, sects. 140 and 141] to hospital, in easy and roomy vehicles. Efforts should be made to secure the rigorous punishment, in all possible cases, of persons guilty of spreading infection through the agency of vehicles, clothes, lodgings, or by the holding of wakes (sect. 142). For the detection of such offences constant vigilance will be necessary. The Sanitary Authorities should institute a systematic house-to-house inspection of *all* tenement and lodging-houses, and enforce—

(*a.*) The providing of proper sanitary appliances and water supply for the inmates.

[a] In proof of the efficiency of the measures above proposed, reference may be made to a detailed report by Dr. Schleisner, Medical Officer of Health for Copenhagen, on the precautions adopted in that city against the epidemics of 1865–66 and of 1871. [See page 170.]

(*b.*) The cleansing and construction of proper drains and communications with street sewers, the removal of pools of stagnant water, and closing of wells.

(*c.*) The repairing and cleansing of the houses themselves, so as to make them dry and tenantable.

(*d.*) The removal of the healthy members of infected families to suitable refuges.

(*e.*) Inspection of the markets and food supply.

(*f.*) As experience has shown that milk is a fruitful carrier of contagion, the careful inspection of dairies.

(*g.*) The speedy interment of the dead.

The Authorities should further develop the existing system of domestic scavenging, and cause ashpits, privies, or water-closets to be thoroughly cleansed and disinfected. They should also devote special attention to keeping the street gully-traps and ventilators, the public sewers, and the house communications therewith, in the best order.

4. It would be desirable to enforce section 149 of the Public Health (Ireland) Act, 1878, and so afford legal power to the Sanitary Authorities to make chargeable upon the funds at their disposal for the purposes of the Public Health (Ireland) Act, 1878, the expenditure necessary to provide temporary refuges for the reception of families, one or more members of whom may have been atacked by cholera, or who may be compelled to leave their infected dwellings during the process of disinfection.

5. The Authorities should provide ample facilities for affording medical aid for the poor, and for the efficient carrying out of a medical house-to-house visitation, in conformity with the provisions of section 149 of the Public Health (Ireland) Act, 1878; and in case of the outbreak of an epidemic, physicians for special day and night duty should be appointed for different areas or districts in the city and its suburbs. In each of these districts storehouses should be established for the sale of suitable medicines and disinfectants at moderate rates.

6. The experience of the epidemic of 1866 makes it evident that the greatest mortality from cholera in Dublin occurred either on pervious strata (gravel beds), or close to old river courses. In such districts, therefore, the strictest sanitary supervision should be exercised, and the measures above indicated should be carried out in the most complete manner.

III. *Suggestions, for the use of the Public, as to the Treatment of early or suspicious Symptoms at seasons when Cholera is threatened, or is epidemic.*

The College advise no alteration in the habits of living, where these have previously been moderate and regular. All excess should be carefully avoided, especially in the use of alcoholic drinks, as it is of noted experience the intemperate who most certainly fall victims to the most fatal type of cholera, as of other epidemic diseases.

All food likely to cause indigestion or bowel complaint should be carefully avoided, particularly fruit in a large quantity or in an unripe, decayed, or unsound state, likewise fish or meat when in the least tainted.

Water should be used for drinking purposes only after being boiled; and, in consequence of the possibility of milk being diluted with infective water, it likewise should be boiled before use.

Strict personal cleanliness should be practised, and the clothing should be adapted to the season and weather.

All debilitating causes should be carefully avoided—such as excessive and long-continued fatigue and fasting; overcrowding; exposure to moist, stagnant air, or to air loaded with organic effluvia.

During the prevalence of cholera any person affected by any of the following complaints should at once obtain medical advice—

1. Diarrhœa, or looseness of the bowels;
2. Vomiting or sickness of stomach;
3. Pains in the stomach or bowels;
4. Pains or cramps in the legs.

While such aid is being obtained, the patient should be put to bed immediately, and warmth should be encouraged by the application of heat to the body and limbs. Also, in case of sickness of stomach a large mustard poultice should be applied over the abdomen. In the event of cramps ensuing, diligent rubbing of the limbs should be resorted to.

Hot brandy punch should be administered in small and repeated doses, and the diet should be restricted to rice, milk flavoured with cinnamon and brandy, or arrowroot prepared with milk or port wine.

Should relief not be shortly obtained, and the looseness of the bowels continue, ten grains of aromatic chalk powder with opium, or twenty drops of dilute sulphuric acid, with five drops of laudanum, should be administered in a tablespoonful of water, to which a little brandy may be added. This dose, which is intended for an adult, may be repeated every hour for three doses.

The discharges from the bowels should be disinfected, and disposed of as quickly as possible. A wineglassful of the following disinfectant mixture should be poured into the vessel used by the patient, viz.:—

Common sulphate of iron (green copperas), one ounce;

Carbolic acid, a quarter of an ounce;

Water, twenty fluid ounces, or one imperial pint.

Infected bedding and all articles of clothing worn by the sick should be destroyed by fire.

Signed, by order of the College,

William Moore, M.D., Univ. Dubl., *President.*

John William Moore, M.D., Univ. Dubl., *Registrar.*

July 24, 1883.

THE HOSPITAL SHIP IN THE PORT OF DUBLIN.

On Wednesday, May 30, 1883, a sailing vessel, the "Ardmore," from Riga, arrived in Dublin Bay with a case of confluent smallpox on board. The patient, a sailor, was speedily removed to the Port Hospital Ship, which fortunately had not been abolished, as had been proposed in the summer of 1882. The "Ardmore" was placed in strict quarantine, and the sick man's clothes and bedding were destroyed by fire. Owing, no doubt, to these and other equally active measures, adopted under the advice and direction of Dr. Charles A. Cameron, Medical Officer, the infection did not spread, and Dublin was spared an outbreak of smallpox.

Having regard to these facts and to the threatened approach of epidemic cholera at the present time, we have resolved to publish the following letter, addressed to the Corporation of Dublin in July, 1882, when the abolition of the Port Hospital Ship was under consideration:—

"40 Fitzwilliam-square, W., Dublin, *July* 17, 1882.

"TO THE TOWN CLERK OF THE CITY OF DUBLIN.

"SIR,—My position as a citizen and ratepayer of the city of Dublin, I trust, warrants me in asking you to be so good as to lay the present communication before the Municipal Council at an early opportunity, more particularly as the question with which my letter deals—namely, the proposed abolition of the Port Hospital ship now anchored in the River Liffey—is likely to be decided at no distant period.

"As you are well aware, the Port Hospital ship was constructed at a very considerable expense in the year 1874, the Public Health Committee of the Corporation of Dublin, the Boards of Guardians of the North and South Dublin Unions acting as sanitary authorities, and the sanitary authorities of the suburban townships sharing the expense in accordance with the provisions of the Sanitary Act of 1866. The same sanitary authorities have doubtless borne the annual cost of the maintenance of the Port Hospital ship since its establishment in 1874.

"Now, sir, it appears to me that in the many discussions which have lately taken place relative to the Hospital ship, the object for which it was originally established has been completely lost sight of. Some speakers have stated that 'medical men declared that they would never send patients to the Hospital ship,' and even as recently as Thursday last my friend, Sir George Owens, is reported to have said at a meeting of the South Dublin Board of Guardians that 'he had always looked upon the Hospital ship as a mistake, as it had already proved to be a failure.'

"It is perfectly true that within the past eight years the Hospital ship has received only one or two patients, but it cannot be pronounced a failure because the emergency it was intended to meet has not hitherto arisen. What was that emergency?

"On 27th July, 1866, a girl, aged fifteen years, died of cholera at

22 City Quay, having been landed ill of the disease a short time previously from a Liverpool steamer.

"In the same house a girl, aged three years, died of cholera four days afterwards. Within twenty-two weeks from this, its first appearance at 22 City Quay, the cholera epidemic of 1866 slew 1,186 persons in Dublin. The disease in this instance was introduced into Dublin *through the port* from Liverpool, whither it had been carried four weeks previously by German emigrants from Hamburg.

"In the year 1872 cholera again threatened to invade Great Britain and Ireland from the Continent of Europe. Naturally the still recent experience of the ravages of this terrible scourge in 1866 caused much anxiety when the tidings came that it was at our very doors once more. The question of keeping this plague at bay engaged the attention of the then lately founded Dublin Sanitary Association, the Executive Committee of which drew up and extensively circulated some very valuable 'Suggestions in connexion with the threatened approach of Cholera.' Among these 'Suggestions' was included a detailed reference to a report by Dr. Schleisner, Medical Officer of Health for Copenhagen, on the precautions adopted in that city against the epidemics of 1865–66 and of 1871. These precautions were, under Providence, wonderfully successful. Two of them may be mentioned.

"1. All vessels having sailed from a cholera-infected or suspected port, on entering the roadstead of Copenhagen, were examined by the quarantine medical officer.

"2. In an isolated situation near the harbour a hospital with 20 beds was prepared to receive the cholera patients on removal from the ships. This cholera hospital was kept completely isolated from the city.

"In this special hospital 58 cases of cholera, cholerine, or suspected diarrhœa from 2,233 ships arriving from cholera-infected localities were treated from May 6 to November 10, 1866, while within the same period only four cases of cholera occurred in the city of Copenhagen.

"Impressed with the marvellous results of the precautionary measures taken by the authorities of the Danish capital, the Dublin Sanitary Association recommended that arrangements should be made for the inspection of all vessels arriving in the Liffey and at Kingstown, if known to come from a port infected by cholera, and further that an isolated hospital be prepared, either floating or within a convenient distance of the river, to which patients suffering from suspicious diarrhœa, cholerine, or cholera on board vessels, should be instantly removed.

"These views were embodied in a memorial presented by the Sanitary Association to the Lord Mayor, Aldermen, and Burgesses of the City of Dublin at the City Hall on February 12, 1873 (see Report of the Royal Sanitary Commission, Dublin, 1879, page 91, *et sequitur*). To the credit of the Corporation and of the sanitary authorities of the neigh-

bouring districts, the suggestions of the Sanitary Association were given effect to within a year by the establishment of the Port Hospital ship, which it is now proposed to abolish. It will be remembered that at first the intention was to found a cholera hospital on or near the Pigeon House road, but owing to the strenuous opposition to the plan offered by the Earl of Pembroke, the lord of the soil, by the military authorities, and by the inhabitants of the district, the project of a hospital on shore was abandoned and the Hospital ship was constructed. Although it has not been utilised to prevent the entrance of an epidemic disease into Dublin through the port, an opportunity of doing so was allowed to slip by in the summer of 1876. A woman from Manchester, suffering from smallpox, was admitted to a general hospital in this city, where she gave the disease to a poor girl who thereby lost her life—first, however, establishing a focus of the disease in Clarendon-street, in the very heart of the city. Very different might have been the history of the last terrible epidemic of smallpox had the patient from Manchester (a town known to be infected) been removed to the Port Hospital ship, instead of to a general hospital in the middle of the city of Dublin.

"From the foregoing statement of facts it will, I think, be seen that the purpose for which the Port Hospital ship was established was to prevent the introduction of epidemic diseases from without by intercepting patients suffering from them at the time of their arrival in harbour. It is clear, then, that no physician practising in Dublin will be asked to send patients to the Hospital ship. Furthermore, it is no argument for the uselessness of the floating Hospital that it has not been used during the eight years it has been moored in the river. In the first place, it should have been used in 1876, when smallpox came into Dublin from Manchester. In the next place, although the expected epidemic of cholera providentially did not visit Dublin, that is no reason why so valuable a precautionary measure as an intercepting hospital should now be abolished as though cholera would never again devastate the cities and towns of Western Europe.

"Lastly, to my mind the very fact that the Hospital ship was in the first instance so costly is a strong argument against its hasty abolition. If it is maintained in a state of efficiency at even a considerable annual outlay for a long series of years, and at last does for Dublin what the intercepting cholera hospital at Copenhagen did for that city in 1866 and 1871, then, I say, the original cost of the vessel and the yearly expenditure upon it will be repaid a thousandfold to the citizens of Dublin and the inhabitants of the neighbouring townships.

"I remain, Sir, your obedient Servant,

"JOHN WILLIAM MOORE, M.D., Univ. Dubl.;

"*Fellow and Vice-President, King and Queen's College of Physicians;*

"*Physician to the Meath Hospital, and to Cork-street Fever Hospital.*"

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P., F.M.S.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, July 14, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	349,685	716	634	105	159	–	3	1	1	24	28	5	105	23·6	2·1
Belfast, -	214,022	509	371	62	59	–	-	19	1	11	7	10	63	22·5	2·9
Cork, -	80,124	146	129	9	33	–	–	–	1	–	3	–	31	20·9	0·6
Limerick, -	38,562	78	59	9	22	–	–	–	–	4	–	–	10	19·9	1·3
Derry, -	29,162	78	44	5	10	–	–	6	–	–	–	–	5	19·6	2·7
Waterford,	22,457	52	30	4	7	–	–	–	–	–	2	2	5	17·4	2·3
Galway, -	15,471	27	35	8	8	–	–	–	–	1	2	2	5	29·4	4·2
Newry, -	14,808	31	21	2	2	–	4	–	–	–	–	–	3	16·0	3·5

Remarks.

A further lessening of the death-rate is observed, except in Cork and Newry, in which it rose slightly, and in Galway, where it was nearly double that recorded in the preceding four weeks. The registered deaths represented a ratio of 22·1 per 1,000 of the population annually in the sixteen principal town districts of Ireland, 19·9 in twenty-eight large English towns (including London, in which the death-rate was 19·9), 19·5 in Edinburgh, and 27·4 in Glasgow. If we deduct the number (20) of deaths of persons admitted into public institutions from localities outside the registration district, we find that the rate of mortality within the Dublin registration district becomes 22·8 per 1,000 per annum, while that within the municipal boundary is 25·3.

Febrile zymotic diseases caused a death-rate of 4·2 in Galway and of only 0·6 in Cork. In Dublin the rate was 2·1; in Belfast it was 2·9. The results are favourable except in Galway.

In the Dublin registration district the births were 716, or as many as 178 fewer than in the previous four weeks, and the deaths were 634, or 110 fewer. One hundred and five children died within the first twelve months after their birth, against 104 deaths in the preceding period.

One hundred and fifty-nine persons aged sixty and upwards died, compared with 183 previously.

The deaths from febrile zymotics were 68 in the Dublin registration district. The average number in the corresponding period of the preceding ten years was 102·4. Measles contributed 3 deaths; scarlet fever and diphtheria, 1 each; diarrhœal diseases (including dysentery), 5; whooping-cough, 24; and "fevers," 23. The epidemic of whooping-cough appears to be slowly subsiding, the registered deaths being 7 fewer than in the previous four weeks. The fatalities as usual mostly occurred among children of very tender age—among the 24 victims were 22 children under five years of age, including 10 who had not lived for one year. The 23 deaths referred to "fevers" were distributed as follow—typhus, 9; enteric, 10; "fever of ill-defined or not determined type," 4. In Belfast no deaths from smallpox were recorded; 4 had been registered in the preceding period; scarlet fever, whooping-cough, and fever—all showed a lessened fatality; but the deaths from diarrhœal diseases increased from 6 to 10. Six deaths from scarlet fever occurred in Derry; 4 from measles in Newry.

Phthisis (pulmonary consumption) caused 227 deaths in the eight chief towns, against 254 in the preceding four weeks. The fatalities from diseases of the organs of respiration in Dublin were 103, compared with a ten-years' average of 101·0 in the corresponding period, and with 143 in the four weeks ending June 16, 1883. The 103 deaths included 56 from bronchitis (average = 66·2) and 22 from pneumonia (average = 19·0).

On Saturday, July 14, the number of cases of the chief epidemic affections under treatment in the principal Dublin hospitals was as follows—smallpox, 0; measles, 1; scarlet fever, 16; typhus, 40; enteric fever, 9; pneumonia, 8.

The mean temperature of the four weeks was 57·7° in Dublin, 54·8° at Belfast, 56·4° at Cork, 61·3° at Greenwich, 57·3° at Glasgow, and 56·8° in Edinburgh. These are about the normal values for the time of year.

METEOROLOGY.

Abstract of Observations made at Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of June, 1883.

Mean Height of Barometer, - - -	29·967 inches.
Maximal Height of Barometer (at 9 a.m. of 13th), -	30·442 ,,
Minimal Height of Barometer (at 6 p.m. of 27th), -	29·503 ,,
Mean Dry-bulb Temperature, - - -	56·2°.
Mean Wet-bulb Temperature, - - -	52·7°.
Mean Dew-point Temperature, - - -	49·4°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·355 inch.

Mean Humidity, - - - - -	78·7 per cent.
Highest Temperature in Shade (on 30th), - -	70·1°.
Lowest Temperature in Shade (on 16th), - -	44·4°.
Lowest Temperature on Grass (Radiation) (on 16th),	42·6°.
Mean Amount of Cloud, - - - -	62·3 per cent.
Rainfall (on 18 days), - - - -	1·932 inches.
Greatest Daily Rainfall (on 17th), - - -	·280 inch.
General Directions of Wind, - -	W.N.W., E., E.N.E.

Remarks.

The earlier portion of the month was fine and often bright. After the 13th the weather was cloudy, showery, and generally changeable and cool. The last three days were warm. The mean height of the barometer was identical with that in May. The mean temperature was about one degree below that of June in the previous eighteen years. The rainfall (1·932 inches) was nearly the average (2·004 inches), while the rainy days (18) were four in excess.

Until the 8th an area of high atmospherical pressure held over Scotland, so that light easterly winds were experienced in England and Ireland. On the E. coast of Ireland brilliant sunshine prevailed until the afternoon of the 6th, when electrical clouds overspread the sky from S.S.E., as a "thunderstorm depression" approached from Spain and the Bay of Biscay. In Dublin ten hours rainfall occurred on the 7th; next day distant thunder was heard, and at 4 p.m. of the 9th a sharp thunderstorm came up from N.W., while the ground-breeze was easterly. A few fine, dry and warm days followed, the barometer being higher over Ireland than anywhere else in Western Europe, so that northerly winds were prevalent. A solar halo appeared at noon of the 13th, and the following days witnessed a decided change in the weather—a warm, sunny morning being succeeded by a cloudy day and a cold rainy evening. On the 15th massive cumuli formed and discharged themselves in heavy showers of cold rain and hail—at 3 30 p.m. an exceptionally violent hail-shower passed across the city. A spell of cold, unsettled weather followed, in connexion with a depression, which lay off the S. of Norway for several days, thus inducing a cool north-westerly current in the United Kingdom. On the 19th and 20th a small but well-marked cyclonic system travelled from N.N.W. to S.S.E. across the N.E. of Ireland, the Irish Sea, Wales, and the S.W. of England to Normandy. It caused dull, cool, rainy weather with north-easterly winds in Ireland. At Oxford a downpour of rain and hail occurred on the 20th, and on the following day severe thunderstorms were reported from the midland counties and S.E. of England. At this time the weather became temporarily fair and bright in Ireland, but soon a new series of depressions began to skirt the western coasts, causing a renewal of cloudy, unsettled

weather. On the 25th a low pressure area formed over the S.E. of England, travelling thence north-westwards and finally disappearing off the Hebrides on the 28th. It produced a succession of violent thunderstorms in England—that of the 25th being exceptionally violent and destructive. Temperature now began to rise, so that at 8 a.m. of the 29th the thermometer was as high as 73° in London, rising to 84° in the course of the day. The thunderstorms broke out afresh over England, and even in Ireland a storm of some severity was experienced on the 29th, although the east coast escaped. The last day of the month was very fine in Dublin, where the thermometer rose to 70·1° in the screen.

In Dublin thunder was heard on the 8th, and a thunderstorm occurred on the 9th. Hail fell on the 15th. A solar halo was seen on the 13th. Vapour fogs prevailed on the 7th and 8th.

In the six months ending June 30, 1883, 13·649 inches of rain have fallen on 90 days in Dublin. Of this amount 3·783 inches, or more than a quarter, were registered on three days—namely, February 1 (1·007 inches), April 26 (1·389 inches), and May 8 (1·387 inches).

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

HOW TO BRING UP INFANTS.

Mr. Edmund Owen, F.R.C.S., has published the following "Rules for Out-patients," in leaflet form:—*What food to give.*—Mother's milk is the proper food for babies, and until they are three or four months old they should have nothing else; but if that cannot be got or be not sufficient, cow's milk fresh two or three times a day, and from the same cow, and not scalded, is the next best food; but it must be freely diluted, as it is much too "strong." The bottle should be filled with a mixture of cow's milk and warm water, in which a lump of white sugar and a very small pinch of salt have been dissolved. For the first few months there should be more water than milk—perhaps *twice as much water* as milk—and as the babe thrives the proportion of milk may be gradually increased. *No other food* should be given before the sixth month; baked flour, arrowroot, and oatmeal cannot be digested, so they cause sickness and diarrhœa. *When to give it.*—For the first month a baby should be fed every two hours, and, by gradually increasing the interval, he is in time fed every three, and, eventually, every four hours. He should not be fed because he cries; very likely he is in pain because his stomach is overloaded. When he is sick after his milk he should be fed for a less time and at shorter intervals, and if the bottle is being used a larger proportion of water must be tried, and if he is a fair sleeper he should be woke up for his regular meals, and never allowed to over-feed. A tablespoon-

fule of lime-water may be added to each bottleful of food, and especially so in summer. *How to give it.*—The best kind of feeding-bottle is the old-fashioned, long, straight one, with a short india-rubber teat, and with no tube at all. The very worst kind is that with the long india-rubber tube. There should be two bottles, one for day and one for night. After being used the bottle should be thoroughly washed in hot water, in which a little soda has been dissolved, and should then be well rinsed in cold water. Till next wanted it should be kept in a basin of clean cold water. When six months old the baby may be allowed, in addition to milk, boiled bread and milk, oatmeal, Robb's biscuits or Chapman's wheat flour. *Weaning.*—As a rule when the baby is about nine months old the mother should begin to wean him, by giving him less of the breast or bottle, and more of the cow's milk and of the foods just mentioned, and, in addition, a little beef-tea or meat-broth and soaked bread. At a year old the child must be entirely weaned, and soon he must have daily a little under-cooked meat pounded up into a pulp, and to which a little gravy and salt are added; some potato finely mashed and covered with gravy, an egg, or a little milk-pudding. On no account should he be allowed any wine, beer, tea, or coffee, though he may have cocoa and milk. He should be given his meals regularly, and he should not be allowed to "pick" at bread and butter, cakes, and sweet-stuff in the intervals. Children flourish best on fresh foods. The worst nourished patients that I see at the Hospital for Sick Children are those reared on Swiss milk and various patent foods. *Rule.*—Do not give a baby food or physic that is advertised. *Clothing.*—Babies and little children must be kept always warm. They cannot be "hardened" by scanty clothing or cold baths. Their necks, thighs, legs, and arms need to be covered as well as their chests and bodies; they should wear long sleeves and stockings, and, when old enough, cotton or flannel drawers. *Fresh air.*—Children should be taken out of doors each day that the weather is fine. If they are sent out in a perambulator care must be taken that the feet and legs are warm to start with, and that they are so well covered throughout the ride that they are warm on the return home. Every day, unless a bitter wind is blowing, or it is foggy, the windows should be opened for a while, for fresh air is as necessary for children as fresh food. *Sleeping.*—At night if a child perspires freely or kicks off the bed-clothes he should wear a flannel bed-gown long enough to be tied below his feet, and the bed-clothes must be securely tucked in. He should not be rocked or patted to make him sleep; sleep should come naturally, and, like the food, at regular intervals. *Bathing.*—Morning and night he should be washed all over in warm water, but should not be exposed long enough to feel chilly afterwards. A handful of sea-salt thoroughly dissolved may be added to the bath. Except in the very warmest weather no little child should be put in a cold bath.

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OF

MEDICAL SCIENCE.

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SEPTEMBER 1, 1883.

PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*On the Relative Value of the more commonly used Antiperiodics in the Treatment of Indian Intermittents. An Analysis of 253 Cases.* By SURGEON-MAJOR ALBERT A. GORE, M.D.; Fellow of the Royal College of Surgeons, and Member of the King and Queen's College of Physicians, in Ireland; in Medical Charge of the Female Hospital, Staff and Departments, Dublin.

THE following brief notes were recorded when in charge of the Royal Artillery Division at Ferozepore, Punjâb, and are of interest as illustrating the relative curative value of quinine, the cinchona alkaloids, and arsenic in the treatment of ague, so very common of late years in the district referred to. Ferozepore is stated by Professor Parkes to be the hottest station in India, one excepted. He calculated that into the sand here the sun's rays penetrated four feet. In 1876–77 there was a perfect plague of "marsh fever," which was scarcely known until the introduction of canal irrigation. The first canal had burst and flooded miles of this over-heated plain, from which was afterwards given off the miasma which produced the disease. The natives suffered equally with the Europeans, and for a time the bazaars were emptied of their resident population, who, with the garrison, suffered much also in 1878–79, especially in the fall of the year, when very marked alternations of temperature occur.

Quinetum is described as containing the entire alkaloids of the East India red bark without undergoing the tedious processes of

bleaching and crystalline formation, which are wasteful and expensive. In the case of this drug the following formula was used, viz.:—Quinetum, ʒii.; dilute sulphuric acid, ʒii.; water, ℥xxiv.—one ounce for a dose. Liquor arsenicalis, in doses of twenty minims in some demulcent infusion, during the stage of apyrexia, every third or fourth hour; quinine, in ten or fifteen grain doses—all of them after the usual preliminary stages of mild purgation; sedatives to allay gastric irritation when present; diaphoretics, &c.

As a certain and elegant preparation, quinine must always retain its reputation when combined in a form suitable to the idiosyncracies of patients. The cinchona alkaloids not infrequently cause unpleasant gastric symptoms even among natives, but are, nevertheless, of great value, and must continue to be largely used, owing to their cheapness as compared with quinine. Arsenic has for ages been largely exhibited by native doctors throughout India in every form of fever, and with little discrimination. As a powerful nerve-tonic and anti-periodic, it ranks next to quinine. It is usually given by bazaar practitioners in from three to five minim doses in infusion of chiretta, and with benefit, in the milder forms of ague, but it has been administered in much larger doses. M. Fleury, of the French military service, many years since gave an account of 316 cases of ague treated at Roule, near Paris, of which 106 were cured by the medicine, not having been subjected to prior treatment, and 158 after quinine had failed. Mr. John Turner, of the Bombay army, exhibited Fowler's solution, with effect, in doses of from twelve to thirteen minims during apyrexia, with usually a successful result. Some years later M. Boudin wrote:—"On donne à Paris en moyenne un demi-grain par jour, dans l'intervalle des accès. Maïs on peut donner plus." Morehead, as the result of his clinical experience, wrote:—"Half a grain—one drachm of the liquor potassæ arsenitis—given so as to be all taken two hours before the expected paroxysm, is sufficient to prevent the recurrence in mild intermittents in India. It may be exhibited with safety in this quantity in cases in which there is no tendency to gastric or intestinal irritation, and used advantageously in repeated doses of ten minims or less, sometimes combined with a few minims of tincture of opium. Half a grain of arsenious acid has seemed to me to be about equivalent in power to fifteen grains of quinine. It may, therefore, be easily understood why $\frac{1}{8}$ to $\frac{1}{4}$ grain, usually given, has no sensible effect in intermittent fever in India.

Three grains and a half to seven grains of quinine would be equally inefficacious." In the severer intermittents he advocates a system of economising quinine by preventing the recurrence by an adequate dose in the first place, and then to trust to arsenious acid to complete the cure. Sir Ranald Martin, while in India, found himself prescribing arsenic because his patients said to him—"I hope, sir, that you are not going to order quinine for me; it is of no use. I have taken so much of it that it has ceased to stop my fever, while it produces indescribable distress." In such cases he spoke highly of the remedy. Over-dosing with quinine has certainly the effect described. M. Boudin obtained the full benefit of arsenious acid (giving with safety one grain and a half and upwards) by divided doses, enemata, &c., in endeavouring to oppose to the paludal diathesis an arsenical one, and without any ill effects. The following abstract gives the general results in my cases :—

Quinetum in 100 Cases administered.

Average quantity administered	- -	54·6 grains.
Maximal ,,	- -	140·0 ,,
Minimal ,,	- -	25·0 ,,
Average number of days under treatment	-	5·63
Maximal ,, ,,	-	12·0
Minimal ,, ,,	-	3·0

Hydrochlorate of Quinetum in 53 Cases administered.

Average quantity administered	- -	53 grains.
Maximal ,,	- -	114 ,,
Minimal ,,	- -	18 ,,
Average number of days in hospital	-	5·13
Maximal ,, ,,	-	11·0
Minimal ,, ,,	-	3·0

Quinine in 50 Cases administered.—Total expenditure, 3,280 grains.

Average quantity administered	- -	65·6 grains.
Maximal ,,	- -	105 ,,
Minimal ,,	- -	40 ,,
Average number of days in hospital	-	5·26
Maximal ,, ,,	-	8·0
Minimal ,, ,,	-	4·0

Liquor Arsenicalis in 50 Cases administered.

Maximal quantity administered in divided doses		℥xii.
Minimal „ „		℥iii.
Average, a little over 2½ grains to each patient, or - - - - -		309 minims.
Average number of days in hospital -	-	7
Maximal „ „ -	-	14
Minimal „ „ -	-	4

General Summary.

	Average quantity administered.	Average number of days in hospital.
Quinetum - -	- 54·6 grains.	5·63
Hydrochlorate of quinetum	- 53·0 „	5·13
Quinine - -	- 65·6 „	5·86
Arsenic - -	- 2·5 „	7·00

In only two cases was any intolerance of the latter remedy noticed, the symptoms of which quickly disappeared by simply ceasing the administration of the drug. It is best given guarded by a little opium in a draught containing syrup of orange-peel and powder of tragacanth. During convalescence after these fevers, citrate of iron and cinchonidine—a remedy then recently introduced into military hospitals in India—was administered with as much benefit as was formerly obtained from the more expensive citrate of iron and quinine, which it closely resembles in appearance. Spirit of chloroform and tincture of orange-peel were usually added to the mixture.

Art. VIII—*The Arrangement of the Peritoneum in Man and other Animals.* By R. J. Anderson, M.A., M.D., M.R.C.S.E.; Demonstrator of Anatomy, Queen's College, Belfast.

The abdominal, thoracic, and arachnoid cavities are examples of spaces which are found in abundance in various parts of the body. Spaces in connexion with the lymphatic system, and similar in epithelial lining to the great serous sacs, were pointed out long ago by Recklinghausen, His, Krause, and other anatomists.

These spaces, called lymph spaces, are of different sizes. Bands sometimes extend across them, these also covered by an epithelial lining. Bands or thread-like structures are found in small lymphatics, as was pointed out first by Gaskell (Ludwig's "Arbeiten,"

1875), in lymph spaces, in the corneal chamber, and in the sub-arachnoid space.

In the lymphatic system all forms are met with—lymphatics in the form of free tubes, lymphatics with bands, large lymph spaces without bands, lymph spaces with bands, lymphatic glands with numerous trabeculæ bounding spaces, which are further subdivided by special bands. In the sub-arachnoid space bands are present; in the peritoneum cavity we have an example of a great space almost uninterrupted. The lymph hearts found in various animals are spaces that have muscle fibres in their walls, and these in many cases have bands of the same tissue, which extend across the cavity. In lymphatic glands a fibrous capsule replaces the muscle, and the fibrous trabeculæ the muscle bands.

The formation of such spaces may be accounted for in two ways—first, by the pressure of fluid in the intercellular spaces, causing absorption of the tissue, in a manner similar to that which takes place in fibro-vascular bundles in plants where cells are converted into vessels by absorption of the adjacent walls; or, secondly, by the independent action of two parts of the same tissue, or of two adjacent tissues. The former is the important factor in giving rise to such cavities as the corneal chamber, and the effect of internal pressure is manifested in structures of a very different nature—as, for example, in the formation of the urinary bladder. In birds the latter disappears a short time after birth when the pressure is removed.

The second agent is of great importance, and is indeed the sole cause of the production of spaces in many cases. The first indeed might be regarded as a particular example of the second. For we cannot conceive pressure existing without force, and motion or velocity can be expressed in terms of force and mass for a unit of time; and if the mass be constant, then the force will be a measure of the degree of movement. In the first, however—the physiological factor—absorption becomes more prominent than in the latter.

It is to the effect of movement of parts of a tissue in the production of spaces that I wish to limit myself, and the following considerations will render this more evident.

Lymph spaces and even lymphatics are, as far as we know, absent altogether, or (the latter) occur in very small numbers, where the parts of any tissue do not change their relative positions. Thus, in bone where no motion takes place between the elements

of the tissue, lymphatics are but few, and mainly confined to the periosteum. In tendon the inverting sheath contains lymphatics. Those of the tendon proper are by no means so certain, although Ludwig and Dogiel succeeded in injecting some spaces between the bundles. In voluntary muscles no lymphatics are present apart from the sheaths;[a] here the motion tends to keep the fibres together, so that the muscle moves as a whole as it shortens and thickens. If the amount of lymph depends on the amount of blood distributed to a tissue, then we should expect to find very numerous lymphatics in voluntary muscles. On the other hand, if sluggish action and a small amount of blood be attended with a large lymph supply, then the lymphatics of bone are simply perivascular spaces of a somewhat doubtful nature.

In the skin lymphatics are numerous; in the subcutaneous areolar tissue, abundance of lymphatics and lymph spaces; in packing tissue, everywhere; and this, apart from the presence of lymphatics, merely passing through the tissue.

In the alimentary canal, throughout its whole extent, lymphatics are abundant—not merely in the small intestine, where their presence may very naturally be attributed to a cause different from motion of the parts, but in the tongue and œsophagus. In the urinary bladder they are abundant (Hoggan), and in the lungs.

Thus we see that lymphatics are absent, or few in number, in organs where the nature of things prevents any interstitial motion, as in the voluntary muscles, the brain, the spinal cord, and bone. They are abundant in involuntary muscles, in certain organs and areolar tissue.

In the skin, bursæ over the olecranon, patella, ischium, and other resisting parts, clearly result from the stretching and ultimate rupture of the subjacent bands. The fact that the simple pressure is intermittent negatives the idea that a physiological action is the important factor. Between bone and muscle, bone and tendon, and between parts of the same muscle, bursæ are quite common, and subcutaneous bursæ may be artificially produced by movements of the skin over a resisting part. Thus the bursa produced over the shoulder in men who carry weights in that position evidently results in this way.

The effect of bodily exercise, carried out through two or more

[a] Dr. Hoggan recently showed me, however, a portion of the abdominal wall of a mouse, where the lymphatics were very distinct, and situated on both sides of the ᵐcle.

generations, in producing great mobility of the skin—a condition we meet with in men of good physique—is well known. In others the skin is firmly bound down, and lymphatic obstruction frequently manifests it in the form of nodular swellings. In animals the former condition is best known, although the latter is by no means infrequently met with. In the frog, where the skin is very loose, a large lymph space is found beneath.

One other set of cases may be instanced. Joints are formed between bones, without reference to the tissues lying outside. But it is not uncommon to find the bursæ which are situated in the neighbourhood of a joint communicating with that joint. The bursa beneath the subscapularis always, and that beneath the infraspinatus frequently, communicates with the synovial cavity of the shoulder-joint. Those bursæ were, without doubt, originally distinct closed sacs, formed by the motion of the tendons. The close connexion of the latter with the capsule enabled them to extend the bursæ to the synovial sac by rupture of the septum between the cavities.

It thus appears that the mobility of certain parts, and the independent action of neighbouring parts, are associated with large lymph spaces or sacs; and sufficient reasons have been given, and examples adduced, to show that the former are the active agents in producing the latter.

The pleural, peritoneal, and arachnoid cavities are clearly the result of the independent actions of the viscera and the body parietes. Relative motion is here spoken of, for if we suppose one part to move against the other, we may equally suppose the second to move against the first. In the cranial cavity the brain moves absolutely, but the cranium relatively. In the thorax the lungs move with the chest wall, but the point that subtends any particular point in the chest wall in the contracted state, does not subtend the same part in the dilated condition. In the abdomen the parietes may influence, but do not control the action of the alimentary canal.

In Invertebrates, even where there is a pretty complete perivisceral cavity, the peritoneal covering is incomplete; there is never a mesentery present analogous to the mesentery of superior animals, and, generally, the parietal layer remains imperfect, so that the sac communicates more or less freely with the neighbouring intraorganic structures (Milne-Edwards).[a]

In the Actinozoa there is a distinct perivisceral cavity divided by

[a] La physiologie, &c., comparée. Milne-Edwards. Vol. IX., p. 506.

mesenteries, which extend from the gastric sac to the parietes. At the inner end the gastric sac communicates with the intermesenteric chambers. Professor Huxley quotes Lecaze-Duthiers in describing the development of the Actiniæ. At first two mesenteries are formed, dividing the perivisceral cavity into two unequal compartments, and by the increase in the number of mesenteries, the larger cavity is divided into seven, the smaller into five compartments. In this way, the perivisceral cavity comes to have twelve different compartments.[a]

In the Rotifers there is a large perivisceral cavity.

In the leech the mesoderm is excavated by blood channels, and in the earth-worm the perivisceral cavity is divided into compartments by mesenteries containing muscle, and Professor Huxley is disposed to regard the blood-vessels as a differentiated part of the perivisceral cavity. The perivisceral compartments communicate with the external air by dorsal pores and the segmental organs. In the Polychæta mesenteries, sometimes in the form of membranous bands, attach the intestine to the body wall.

In the Gephyrea there is a spacious perivisceral cavity which sometimes opens externally by a terminal pore.

In Brachiopods there is a spacious perivisceral cavity, peritoneum covered with ciliated epithelium, and bands of the same membrane attach it to the abdominal wall.

I have selected from various sub-kingdoms examples where a perivisceral cavity occurs in a more or less complete form. In others the perivisceral cavity has no existence, or is perhaps represented by vascular channels or sinuses. All point to the conclusion that independent action of the body parietes sets the intestinal tube free.

Where this independence is least the space between the ectoderm and endoderm is filled up with muscle, as in the higher Turbellarians. From this a canal supplied with mesenteries is more or less independent, according as fibrous bands or muscular mesenteries are present. Between the first and second may be placed such as have venous sinuses; and amongst those where the greatest independence of action becomes most prominent are those which have a complete perivisceral cavity and those where the endoderm is hardened, so that motion is impossible.

In Vertebrata the peritoneal sac is well developed, and although the body wall may and in many cases does influence the alimentary

[a] Comp. Anatomy. Pp. 152, et seq.

tube, this power is much less used, and when used is less effective than in those invertebrates where no perivisceral sac is present. The muscles of the abdominal wall are brought into action under certain circumstances—viz., when the abdominal viscera require help to expel their contents. Some anatomists have questioned the propriety of applying the term peritoneum and peritoneal cavity to the structure occupying the same relative position in invertebrata. There is no doubt that the connexion of the peritoneal cavity with the lymphatic system and its communication with the external air in many cases point to a resemblance.[a]

In Fishes the short canal is sometimes nearly straight, as in the herring, where it turns forwards near the pylorus, and then is carried in a nearly straight line to the anus (Monro). In the pike the first part of the intestine is large and reaches to the under part of the œsophagus, then it passes directly backwards to the anus (Rathke).[b] In the carp the intestine is greatly elongated (Pétit).[c] The mode of attachment of the intestine to the abdominal wall varies. A mesentery rarely connects it in its whole course to the parietes of the abdomen. It is often nearly altogether free; in cartilaginous fishes especially, it is attached by isolated bands that conduct the blood-vessels to it. In other cases cellular filaments fix it, as in the turbot; and in some it is embedded for its whole length in a dense layer of firm connective tissue (Meckel). The retrograde development found in the turbot and others is carried still further in the carp and lamprey, where Rathke found no trace of the existence of a mesentery, even at a very early age.

The arrangement of the peritoneal connexions in the Reptiles and Amphibia is simple. In the Ophidia, Crocodiles, and Chelonia, there is a modification of the peritoneal covering. In Ophidia the serous fold, in place of accompanying the intestine in its whole length, forms a kind of pouch, which embraces the short convolutions already collected in a bundle and bound to the posterior abdominal wall by connective tissue (Robert). In crocodiles, according to Professor Owen, the layer on the internal surface of the stomach is prolonged on the inferior surface of the right lobe of the liver, and constitutes, as usual, a loose mesentery for the intestines, but the layer on the superior surface of the stomach is

[a] The connexion of the peritoneal cavity with the lymphatic system is denied by Hoggan.

[b] Quoted by Milne-Edwards. Op. cit.

[c] Vergleichende Anatomie. B. 4.

reflected on the inferior surface of the left lobe of the liver, and forms a special cavity, so that the stomach is not free in the visceral cavity.

In tortoises, properly so called, the transverse mesocolon is prolonged to form the mesentery to which the small intestine is suspended. In the turtle the mesocolon, formed by a band detached from the envelope of the right lung, gives rise to a mesorectum, and is attached to the right mesentery. In most Amphibia and Reptiles muscle bands are met with which extend into the mesentery and lie along the principal vessels. Muscle fibres are not present in the mesentery of frogs or toads. In the Chelonians the large intestine ascends to the stomach and is in relation to this viscus by its mesentery, and reminds one a little of the condition that obtains in man (Milne-Edwards).

In Birds the intestine forms an arch below the stomach, the duodenum, which lodges the pancreas between its two branches. The succeeding portion of small intestine is sometimes simple and folded upon itself; it may, however, be more complex. A third portion ascends again to the duodenal arch and is attached to it, and after making one or more bends ends in the large intestine.[a]

In Mammals we have examples of the simplest and of the most complex form. In Marsupialia, as a rule, the mesentery is nearly as simple as in reptiles (Owen). In the Wombat, however, the duodenum passes under the tranverse colon precisely as in the human subject, and the intestine between the parts which cross is seen to continue in the form of a greatly convoluted loop not otherwise attached to the parietes, the cæcum, and the ascending colon forming part of the pendulous loop (Cleland).[b]

In Cetacea the intestine is suspended by a continuous mesentery. In the porpoise, "the duodenum does not pass behind the mesentery as in most animals of this class" (Hunter).[c] In a specimen of Phocæna melas which I had an opportunity of examining, the stomach was connected to the liver above by the gastro-hepatic omentum. The great omentum contained an omental cavity which extended upwards behind the stomach, but had no communication with the large sac. The foramen of Winslow was absent.

In the badger (Meles taxus) the peritoneal covering of the stomach has the usual connexions. The great omentum is gastro-splenic. The left third of the pancreas derives its peritoneal covering

[a] Op. cit., p. 378, et seq.
[b] Journal of Anatomy. May, 1870. Vol. IV., p. 197.
[c] Flower. The Digestive Organs of Mammalia. Med. Times and Gazette.

from both sacs, the remaining part is invested by that part of the great sac which forms the mesentery of the duodenum. The great omentum extends when stretched beyond the pelvis, and is fixed to the abdominal wall close to the median line, between the kidneys, its attached border running directly backwards. The duodenum has a long mesentery; its lower end is at the right side of the attachment of the omentum, and is fused with it for a space of one inch from the parietal end of the mesentery. A fold extends from the convex border of the mesentery, nearly as far as the brim of the pelvis. A large arch is formed by the gut below the duodenum, which is attached by its open end to the abdominal parietes, and subsides below into a straight median tube.

In Mustela furo (ferret) and M. putorius (pole-cat) the great omentum is attached to the posterior abdominal parietes between the kidneys, as in Meles, and contains between its layers a considerable portion of the pancreas. The arrangement of the mesentery is similar to that of the badger. In the otter (Lutra vulgaris) the mesentery presents the same simple form.

In the dog the great omentum attached at one end to the stomach is fixed at the other end to the posterior abdominal wall, the pancreas extending between its folds. The ascending layer, derived from the great sac, passes into the anterior layer of the transverse mesocolon. The cæcum is situated high, and a little to the right of the median line. The duodenum is invested by the great sac which forms its mesentery, and is fused to the under-surface of the transverse mesocolon.

In Erinaceus europaeus the intestinal canal is connected to the posterior abdominal wall by a continuous mesentery, the great omentum is not connected with the colon.

In the Quadrumana the great omentum is attached to the right end or to all the transverse mesocolon. In Cynocephalus anubis the great omentum adheres to the transverse colon only at the right end, the remaining part of the gut being free. In Cebus capuchinus, the right third of the transverse colon, and the upper half of the ascending colon, are connected to the stomach by means of the great omentum, the duodenum passing beneath. Amongst the lemurs Galago crassicaudata has a great omentum which is confined to the left side. The transverse colon, considerably elongated, consists of an ascending and a descending portion, the duodenum passes beneath the mesocolon.[a]

[a] Flower. Op. cit.

In man the transverse colon lies between the layers of the great omentum. The duodenum passes under the transverse mesocolon. The pancreas lies behind the small sac which touches the spleen, and separates the three branches of the cœliac axis. The development of the mesentery and mesocolon is described in works on embryology. Separation of the mesoblast into two layers, except behind and in front—bending in of the body parietes so as to form a tube—dilatation of the tube to form the stomach—union of the left and right peritoneal sacs in front—increased growth of the intestine between the lowest part of the duodenum and the part that is to form the descending colon—twisting of this arch—descent of the cæcum—then growth of the small intestines. The different stages are here thus indicated.

In the examples above given, the condition of the peritoneum is fully illustrated, as we see it after closure of the abdomen in front. In fishes we have examples of the undeveloped mesocolon and mesentery, as well as of the elongated mesentery; in amphibia and reptiles a little more complex; in birds a well-marked duodenum; in mammals a tube attached by a simple mesogastrium in the porpoise, as Hunter pointed out; the arrangement more complex in the badger; the cæcum high in the dog. The great omentum attached to the right side of the colon in certain quadrumana, and to all the transverse colon in the higher individuals of the latter order. All the changes are thus susceptible of an easy explanation except two—viz., the formation of the small sac, and the development of the mesocolon, as we see in man. The extension of the small sac, so as to involve the colon, is well explained and figured by Professor Flower in his excellent "Lectures on the Mammalian Digestive System," a work to which I am under extensive obligation.

The formation of the small sac is usually explained in this way:—The stomach is at first attached by the mesogastrium running from its future left border to the posterior abdominal wall. It is drawn with the duodenum to the left side, turning over so as to place its posterior border at the left side, and the lesser curvature at the right, thus enclosing a fossa which has an opening—the future foramen of Winslow—which in the course of development becomes smaller, whilst the small sac becomes larger. The gastro-hepatic omentum has the same significance as the falciform ligament of the liver. The explanation here given is that of J. Müller, and has been generally adopted by anatomists. Now, the observations on which this explanation seems to rest may justly be interpreted in a

different manner. The stomach is described as placed longitudinally at first—the truth is, the stomach in man is always placed longitudinally; and in an embryo one and a half inches long, which I examined a short time ago, the small sac was formed, and the stomach was not only placed longitudinally but the small curvature was turned forwards. Now, this, if it means anything, shows that the small sac is not produced by the stomach being drawn over to the right side—a circumstance on which J. Müller's explanation largely rests. I have given above instances of cavities being formed in different parts of animal bodies by means of the rupture of bands; and I have given sufficient examples to show that friction is the chief agent, mainly to bring into prominence the immense influence which this agent has in determining and producing spaces. The observations of Rathke in the carp mentioned by Meckel and Milne-Edwards throw a flood of light upon this subject, and all seem to show that when the body parietes are relatively more active than the subjacent parts, cavities are produced. How, then, can this be applied? It is quite clear that the liver grows up at the right, and the pancreas at the left side of the mesogastrium, each by a prolongation from the hypoblast. The ducts in the adult enter the attached border of the duodenum—the posterior border. Hence, morphologically, the liver belongs not to the anterior border of the gut, but to the posterior border as well as the pancreas, and its vascular supply points to the same conclusion, for the liver and the lower half of the right border of the stomach are supplied by the right half of the hepatic artery, and the lower part of the left or larger border receives its supply from the left half of the hepatic artery—that part which supplies the pancreas and duodenum. One of the most common varieties is a branch of the coronary artery to the right lobe of the liver. Here again we see that the vascular supply of the liver is associated with the supply of the stomach. Now, we cannot conceive the coronary artery entering any other part of the stomach except that part which is attached—viz., that part which is in most intimate relation with the abdominal parietes. The vascular supply of the stomach is just such as we ought to expect—if the mesial arrangement be brought about by the coalescence of the greater and lesser omenta to form a single mesentery. The coronary artery would then supply the first part of the stomach and liver (in part), the splenic the second, and the hepatic the third—the pancreas receiving branches from the second and third. The distribution of the va-

point in the same direction, for the left vagus gives off branches to the coronary and hepatic plexuses, whilst the right gives branches to the cœliac and splenic plexuses. If, then, we begin with the intestine attached by a continuous mesogastrium very short and broad, the weight of the liver and the attachment of this viscus to the stomach and duodenum will cause a considerable amount of friction between the former and the abdominal wall, and give rise to a cavity which grows with the growth of the stomach, and be more extensive the more extensive the movements of the stomach itself. Such parts of the mesogastrium as happen to be attached to the more movable parts of the stomach will become greatly elongated and attenuated, and extend through a considerable part when the liver is very large. The more fixed parts of the stomach experience a forward movement, which forms the pyloric end in front of the cardiac end, but this afterwards becomes less marked, and by the traction of the hepatic vessels and duct upon the fold, and an extension of the sac, a communication is established between the small and the great sacs. In this way a small bursa becomes a large sac.

The formation of a retro-peritoneal hernia (intra-peritoneal hernia of Prof. Chiene) can be fully accounted for by supposing the fossa duodeno-jejunalis—a small fossa situated at the junction of the duodenum and jejunum, and formed itself partly by friction—to become enlarged by the pressure of the duodenum. In this way it is accounted for by Treitz, although a different explanation is given by Prof. Cleland. The extension of the small sac takes place along the arteries that supply the intestinal canal. It extends along the coronary and hepatic; then along the splenic, but it is prolonged over the superior mesenteric in its highest state of extension. It gets behind one artery usually—namely, the hepatic, but it is placed in front of the others. In the case of Phocæna melas, above mentioned, the extension did not take place, as the communication between the great and small sacs depends largely on the degree of forward movement of the hepatic vessels and duct. The connexion of the small sac has been already alluded to; it is due solely to the extension of the small sac downwards. The position of the pancreas determines its relations with reference to the small sac, duodenal mesentery, and mesocolon. If the duodenal mesentery be large, it lies between its layers at the right side; if short, the small sac covers it in front; where the great omentum does not reach the colon, it lies partly between its layers; where it

reaches the colon only, its lower surface comes in contact with the mesocolon.

The position of the duodenum and colon in man will be understood if we remember that the liver, at the sixth or seventh week, is very large, and nearly fills the abdomen; now, about the sixth week, the arrangement of the mesentery is extremely simple. At the tenth week the transverse colon has crossed the duodenum; at this period the liver is relatively smaller. If we remember, then, that the hepatic duct is fixed to the duodenum, under the middle of the arch, it will be clear that an enlargement or diminution of the liver cannot take place without, in some way, affecting the position of the duodenum. When the liver moves upwards, it draws the duodenum upwards, and as it moves to the right, the duodenum follows it. With the arched arrangement of the colon, such as exists, traction on the duodenum will cause it to pass beneath the transverse colon, so that the latter will appear to pass over the former. Hence, the twist in the gut, which appears so curious, is most readily explained by the ascent (relatively) of the liver and its passage to the right side. The subsequent growth of the intestine, between the points at which one piece crosses the other, produces the arrangement which we see in the adult man.

The evidence which I have brought forward seems to point to the following conclusions:—

(1.) The small sac is not formed from the large sac, but independently.

(2.) During the early stages of its formation, the lesser curvature looks forward. But, both before and after this, it is situated at the right side.

(3.) The foramen of Winslow is formed like the rest of the small sac—viz., by separation of the mesogastrium.

(4.) The position of the duodenum is determined by the altered position of the liver.

(5.) The twist in the intestine, between the duodenum and transverse colon, is due to the same cause.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Dictionary of Medicine, including General Pathology, General Therapeutics, Hygiene, and the Diseases peculiar to Women and Children. By various Writers. Edited by RICHARD QUAIN, M.D., F.R.S., &c. London: Longmans, Green, & Co. 1882. Medium 8vo. Pp. 1836.

WE may be permitted to indulge in a little national self-laudation when we reflect that to an Irishman is due the credit of bringing to a successful issue the laborious and responsible task of publishing a new and complete Medical Dictionary. The editor, Dr. Richard Quain—himself an Irishman—deserves the greatest credit, with the single reservation subsequently alluded to, for the ability he displayed in organising the staff of contributors, and for the untiring energy and skill with which he afterwards gave effect to their labours. As he says in the preface:—

"The present work, which is the result of these combined efforts, may be regarded not only as a dictionary, but also as a treatise on systematic medicine, in which the articles on the more important subjects constitute monographs in themselves."

The description of each disease includes an account of its ætiology, anatomical characters, symptoms, course, duration, and terminations; its diagnosis, prognosis, and treatment. The articles on General Pathology deal with the origin, characters, and nature of disease; those on General Therapeutics describe the several classes of remedies—medicinal or otherwise—which are available for the treatment of disease, the modes of action of such remedies, and the methods of their use. Hygiene is discussed in articles treating of the causes of disease, its prevention, the agencies and laws affecting public health, the preservation of individual health, the construction and management of hospitals, and the nursing of the sick.

Comprehensive as this scheme is, the Editor modestly disclaims any intention of putting forward the work as a Dictionary of Surgery, or of invading the domain of Materia Medica. It is

explained that, although the work has been several years in preparation, yet every article requiring revision was revised up to the time of going to press, and, by the addition of an Appendix, it has been possible to incorporate the latest contributions to medical knowledge.

Dr. Quain, at the end of the preface, offers his special thanks to his assistant-editors and fellow-labourers—Dr. Frederick T. Roberts and Dr. J. Mitchell Bruce—and pays a graceful tribute to some of those who were his friends and colleagues when the work was commenced, but who have since been called away by death:—

"Edmund Parkes, Charles Murchison, George Callender, Thomas Bevill Peacock, John Rose Cormack, Lockhart Clarke, Tilbury Fox, Thomas Hayden, Harry Leach, Alexander Silver—the loss of these eminent men, many of them dear and valued friends, and all of them taken too soon from their unfinished labours, is to him a source of personal sorrow. The articles written by them for these pages were in most instances their last contributions to medical literature, and will be valued accordingly."

As Irish journalists we naturally sought out the names of Irishmen in the very long list of contributors, extending over more than seven pages, and including about one hundred and fifty eminent members of the profession. We confess to a bitter feeling of disappointment at finding that of this large number of writers only *five* could claim a residence in Ireland—namely, Dr. Finny, Dr. Grimshaw, the late Dr. Hayden, Dr. James Little, and Dr. More Madden. Of the vast number of articles in the book only eleven are signed by medical practitioners residing in Ireland. The articles on "Abdominal Aneurism," "Diseases of the Aorta," "Diseases of the Coronary Artery," and "Thoracic Aneurism," are from the pen of the late Dr. Hayden, and bear the impress of that minuteness of detail and accuracy which characterised his masterly work on "Diseases of the Heart and Aorta." Dr. Grimshaw, the Registrar-General for Ireland, writes with authority on "Cerebro-spinal Fever," and gives a truthful description of "Relapsing Fever." Dr. James Little signs an excellent article on "Diseases of the Arteries;" but this appears to be the only contribution from him in the whole work. Although included in the list of contributors at the beginning, we fail to find Dr. Finny's name attached to a single article. The Irish school of midwifery and gynæcology is represented by Dr. Thomas More Madden, who

is responsible for very good articles on "Diseases of the Placenta," "Pregnancy," "Puberty," and "Disorders of Sexual Functions in the Female."

This is the entire Irish contribution to the "Dictionary," if we except an admirable series of monographs by a distinguished Irishman, now resident in London—Sir William MacCormac—who writes on "Diseases of Bones," "Collapse," "Gangrene," and "Diseases of Joints;" and, of course, Dr. Quain, the Editor of the Dictionary, to whom we are indebted for the articles on "Angina Pectoris," "Aneurism of the Heart," "Atrophy of the Heart," "Connective-tissue Hypertrophy of the Heart," "Fatty Degeneration of the Heart," "Fatty Growth on the Heart," and "Rupture of the Heart," with many others. Although not disposed to magnify the matter into a national grievance, we are bound to say that, in our opinion, the value of this "Dictionary of Medicine," including such subjects as General Pathology, Physiology, Therapeutics, Scientific Surgery, and Diseases of Women and Children, has not been enhanced by the omission from the list of contributors of such well-known Irish writers as A. W. Foot, J. M. Purser, E. H. Bennett, W. G. Smith, G. F. Duffey, George Hugh Kidd, Lombe Atthill, and A. V. Macan.

To review in detail a work extending over more than eighteen hundred pages would be beyond the power of the most able critic. The purpose of the present notice is chiefly to direct attention to Dr. Quain's "Dictionary," and to indicate its leading features. We shall content ourselves with a few general observations on the book and its writers.

In the first place there is ample evidence that the allotment of subjects to the various contributors was judiciously effected. Each contributor volunteered, or was invited, to write on a subject with which he was specially familiar. Hence it is that we have two excellent articles on the "Training of Nurses" and "Nursing the Sick" from the experienced and honoured pen of Florence Nightingale. So also Dr. Lauder Brunton writes on Therapeutical topics, Dr. Thomas Stevenson on Toxicology, Sir Erasmus Wilson on Diseases of the Skin, Dr. Grainger Stewart on Kidney affections in general, Mr. Arthur Cooper on Syphilis and Venereal Sores, Dr. Hermann Weber on Mineral Waters, Captain Douglas Galton, R.E., on the Construction and Administration of Hospitals, Sir T. Spencer Wells, Bart., on Diseases of the Ovaries, Dr. Wickham Legg on Liver Diseases, the late Dr. Murchison on Jaundice; and

so on through the whole list of subjects. In more senses than one Mr. J. F. Payne appropriately writes about "Inflammation."

Among the articles which are specially likely to command attention we would mention those by Dr. W. R. Gowers (the Ophthalmoscope in Medicine), Sir James Paget (Pathology), the late Professor Parkes (Public Health, revised by Dr. George Buchanan, whose initials, G. B., we recognise appended to a short annotation on "Medical Statistics," on page 1514), Dr. C. Theodore Williams (Phthisis), Mr. James Clover (Anæsthetics), Dr. T. Henry Green (Pneumonia), Dr. G. Vivian Poore (Electricity), Mr. C. Macnamara (Cholera), Dr. T. Clifford Allbutt (Pleurisy), Sir Erasmus Wilson (Leprosy), Sir George Balfour (Diseases of the Pericardium), Mr. John Simon (Contagion—to be most profitably read in connexion with the articles at the end of the volume, by Mr. Victor Horsley, on "Zymotic" and "Bacilli"), Dr. R. J. Godlee (Tumours), Dr. J. Netten Radcliffe (Periodicity, and the Plague), Dr. Samuel Fenwick (Diseases of the Stomach), Dr. W. H. Allchin (Diseases of the Intestines), Dr. S. J. Gee (Tubercle), and, last not least, Dr. W. S. Playfair (Diseases of the Womb).

At the end of a short note on "Acute Tuberculosis" (page 1670), the writer, Dr. S. J. Gee, says:—"The treatment of acute tuberculosis is the same as that of any severe fever—for instance, typhus." And this incidental allusion to typhus leads us to mention that while Dr. W. H. Broadbent, Consulting Physician to the London Fever Hospital, treats of Typhoid Fever, the article on "Typhus" is written by Dr. Robert Beveridge, Physician to, and Lecturer on Clinical Medicine at, the Aberdeen Royal Infirmary. The author defines typhus to be "a contagious febrile disease, marked by a peculiar dark rash, with considerable cerebral depression, and lasting about three weeks." This definition, and the article in general, are far from satisfactory. The rash in typhus is frequently not dark; and the author in his definition should explain, as he afterwards does, that the duration of three weeks includes—according to him—the period of convalescence. But even this last statement is not correct or even consistent with the following sentences, met with further on:—

"By the end of the third week the attack may be said to have terminated, but there is often much weakness left, and it may be some time before the strength is completely re-established. Usually a week or ten days will suffice for this; but after a severe attack, or in a patient previously debilitated, several weeks may be required."

We do not agree with the author's description of the rash of typhus, which is, in our opinion, vague, inaccurate, and misleading. He says—

"The rash is almost invariably present; it *appears*[a] in the form of small, roundish, dusky, or brownish-red spots, *not raised at all* above the surface. It is always most marked about the upper, or middle and upper parts of the abdomen, and *it may be limited to a few spots there.* It *sometimes* extends to the limbs, and is then found over the fore-part of the thighs and arms; but this *is by no means very common.* The spots, if numerous, may come out *in successive crops*, extending over two or three days. Once out they *undergo no further change*, except a gradual deepening or darkening in colour. They remain out till the commencement of the week of convalescence, and then they rapidly disappear. In bad cases petechiæ may also be present, and *passive hæmorrhage* in any *situation.*"

Speaking of Complications, Dr. Beveridge informs his readers that—

"The only complication of common occurrence in typhus is a *low form of pneumonia.* This seems to begin chiefly by hypostatic congestion. . . . Probably in all severe cases this gorging (of the posterior part of the lungs) is present to a certain extent—at least it is a very common *post-mortem* appearance; but in some cases the condition goes a step further, and drifts into pneumonia. The disease thus produced rarely runs the course or presents the symptoms of acute pneumonia; it scarcely goes beyond the first stage, presenting on *post-mortem* examination a very dark appearance, as if of great venous congestion, with a certain amount of œdema and solidification; but usually nothing of red or gray hepatisation."

Can anything be more unsatisfactory than this description of what the author calls a "pneumonia," and which he takes the greatest pains to show is not a pneumonia at all?

Under the heading "Treatment," Dr. Beveridge returns to this subject, saying—"If pneumonia occur, *ipecacuanha or similar remedies in small doses* should be had recourse to, along with stimulants." This is, surely, vagueness indeed. The author is sufficiently dogmatic, nevertheless, when he says that—

"For sleeplessness or delirium the best remedies, besides quiet, are darkening the room and applying cold, wet cloths steadily to the head. Cold applications frequently soothe the delirium and procure sleep. Opium and sedatives are ill-borne, and should never be had recourse to."

[a] The Italics are ours.

As usual there is a good deal of truth in some of these recommendations, but as to darkening the room we can only say that this procedure, in the first place, is almost sure to interfere with ventilation and that constant supply of fresh air which is everything to the typhus patient; and, secondly, it obliterates the distinction between night and day, which is of the greatest hygienic as well as psychical importance to the typhus patient. Graves's treatment of sleeplessness in typhus by tartar emetic and opium, and Murchison's modification of his treatment by digitalis and opium, are a sufficient refutation of Dr. Beveridge's prohibition of opium. In the practice of a large Fever Hospital, to the wards of which typhus patients are yearly admitted by hundreds, we have ourselves seen the most obstinate insomnia and the most furious delirium yield to opium given in combination with digitalis or belladonna.

There is another article in the "Dictionary"—that on "Smallpox"—of which we cannot speak in terms of unqualified approbation, although it is written by a physician apparently of great experience in this special subject—namely, Dr. Alexander Collie, Medical Officer to the Fever Hospital, Homerton. He recognises six forms of smallpox—(1) discrete; (2) confluent; (3) hæmorrhagic pustular; (4) malignant; (5) inoculated; (6) smallpox after vaccination and revaccination (modified). This classification is certainly wanting in precision, and is eminently illogical and unscientific. We have the amount of the eruption, the presence of a complication, a factor in the ætiology of the malady, and the influence of preventive treatment, all set forth as standards of comparison in determining the type of the disease. But hear in what terms Dr. Collie defines his third and fourth forms. He writes:—

"HÆMORRHAGIC, PUSTULAR, OR VESICULAR.—This form of smallpox constitutes the connecting link between the confluent and the malignant. With the latter it is often confounded, and hence true malignant has sometimes been said to end in recovery. It is characterised by hæmorrhage into the skin beneath the vesicles or the pustules. There are generally petechiæ, sometimes inkspots, and often subcutaneous hæmorrhage. Recovery is very rare. Death may take place in the vesicular or the pustular stage. MALIGNANT.—Synon.: *Variola nigra; Variola hæmorrhagica;* Black Smallpox; *Purpura variolosa.*—This form is invariably fatal. Its distinguishing features are hæmorrhage into the skin and irregularity in the form of the eruption."

We confess we are at a loss to comprehend these definitions, which appear to us to be not less confused than confusing.

Observation of some three thousand cases of smallpox in two hospitals and during two epidemics has led us to the conclusion that, apart from confluent smallpox in which the patient's life is endangered by the amount of suppuration and the intensity of the secondary or suppurative fever, malignant smallpox is to be recognised under two forms—(1) purpuric, and (2) hæmorrhagic. These forms differ merely in degree—in both the blood is profoundly altered, and devitalised to such an extent that it is incapable of throwing out or developing the characteristic eruption of smallpox. In the purpuric variety the dissolution of the blood leads to the formation of petechiæ, vibices, and ecchymoses—appearances connected with the skin which are sufficiently well known and do not require further definition.

In hæmorrhagic smallpox the dissolution of the blood is carried still further, so that a condition of acute hæmophilia is produced—the ill-fated patient bleeds from every pore and orifice of the body. There is chemosis—he may even weep tears of blood. There is epistaxis—he bleeds from the lips and gums. He spits blood, he vomits blood. The motions from the bowels are tarry. Blood pours from the kidneys, and in the female from the genital organs. Under these circumstances, unless the hæmorrhage is staunched by turpentine and ergot, or ferric chloride, or pyrogallic, gallic, and tannic acid, or other means, death speedily ensues—too often indeed in spite of all that human skill and care can do.

The cessation of the bleeding may bring back hæmorrhagic smallpox to the purpuric form, and in the case of the latter variety of malignant smallpox the restoration of the blood, evidenced by the brightening of the purpuric spots, may be followed by the tardy development of a copious eruption of either aborted pustules (papules)—in which case the patient happily recovers speedily, and without suffering from a fever of maturation—or true and fully formed pustules, when the patient has still to run the gauntlet of a severe attack of confluent smallpox, with its secondary fever, complications, and sequelæ. This is the idea of malignant smallpox and its varieties which we have formed from a lengthened experience, and we fearlessly submit it in contrast to Dr. Collie's views.

As to the remaining exanthemata, measles and scarlet fever are ably handled by Dr. William Squire; chicken-pox is well described by Dr. Collie; and so is Rötheln (or, as the author prefers to call it, "Rubella"—a diminutive of a diminutive "Rubeola") by Dr. Squire.

In conclusion, it is but just to state that the "Dictionary of Medicine" is singularly free from printers' errors, misprints, or inaccuracies. We noticed a few blemishes, such as "tâche" for "tache"—the former word signifying a "task," not a "spot" or "stain," as "tache cérébrale" (cerebral stain); "anchylosis" for "ankylosis" (*ἀγκύλος*, crooked); "variole" as the French synonym for smallpox, instead of the more correct expression "la petite verole;" and so on. These, however, are points of minor importance, and will not detract from the usefulness and popularity of the work, the success of which we are pleased to learn is already assured, inasmuch as the British sale has already reached 7,000 copies, while a large issue has been sold in America.

We should add that Messrs. Longmans, ever ready to adopt a useful suggestion, have overcome the objection at first raised to the unwieldy bulk of the book, by issuing a large number of copies divided into two volumes, with a second title-page. The division is made on page 912, where a space between the letters "L" and "M" as nearly as possible halves the work. Those who have purchased the one-volume edition can obtain at a small cost the second title-page preparatory to having their copy of the work rebound.

RECENT WORKS ON HEALTH-RESORTS AND NATURAL MINERAL WATERS.

1. *The Principal Southern and Swiss Health-resorts; their Climate and Medical Aspect.* By WILLIAM MARCET, M.D., F.R.S., F.R.C.P.; late Senior Assistant Physician to the Westminster Hospital, and Hospital for Consumption and Diseases of the Chest, Brompton, &c. London: J. & A. Churchill. 1883. 8vo. Pp. 408.

2. *Vichy and its Therapeutical Resources.* By DR. PROSSER JAMES. Fifth Edition. London: Baillière, Tindall, & Cox. 1883. Crown 8vo. Pp. 84.

3. *The Mineral Waters of Aix-les-Bains and Marlioz.* By LÉON BLANC, M.D. (Paris). London: J. & A. Churchill. 1883. Fcap. 8vo. Pp. 60.

4. *Medical Guide to Contrexéville (Vosges).* By DR. DEBOUT D'ESTRÉES. London: J. & A. Churchill. 1883. Fcap. 8vo. Pp. 219.

5. *Medical Guide to the Mineral Waters of France and its Wintering Stations.* By A. VINTRAS, M.D.; Physician to the French Embassy; Senior Physician to the French Hospital in London; Chevalier de la Légion d'Honneur. London: J. & A. Churchill. 1883. 8vo. Pp. 334.

AT a moment when many members of our profession are on the eve of starting on their vacation tours, we are opportunely presented with these volumes, which will be found at once useful and interesting by those of us who, during their annual period of relaxation, unite business with pleasure in visiting some of those health-resorts to which they are in the habit of sending their patients. We have pursued this practice for many years, and can testify to its utility. The medical tourist can, at all events, take in some one place of the kind during his vacation; and having done so, he will ever after be able to advise patients in regard to it with a certainty and confidence in no other way to be obtained.

1. Dr. Marcet's work will be most useful not only to the physician on whom falls the duty of selecting a foreign residence for an invalid, but also to the patients whose health demands a change of climate. To the latter especially the work should be welcome, offering, as it does, detailed information upon the meteorological peculiarities of each of the most frequented health-resorts, and also upon the capacity of each for affording accommodation and supplies. In fact, the book is written for the invalid public rather than for their medical advisers, and its style—suggestive rather of the dressing-gown and slippers than of the doctor's robe—is more suited to the former than to the professional reader. Three winter seasons of practice at Nice and six at Cannes qualified the author to speak with considerable authority of the Riviera; and he is also personally acquainted with Swiss sanatoria, with Madeira and the Canary Islands, and with some parts of Italy. The result is a work, as he modestly claims, "not altogether wanting in medical and public utility." We can say more than this for it, and little in dispraise, except that misprints are unpleasantly numerous.

The first two chapters are addressed to invalids about to winter on the Riviera, giving advice upon dress, food, hotels, boarding-houses, apartments, villas, and social life. Chapter III. is devoted to the "natural laws of climate," and the following six chapters describe the special climates of the Mediterranean health-resorts, of

Algiers, Rome, and Egypt, of Madeira and Teneriffe. The tenth chapter discusses "health-resorts under their medical aspect," and the four following chapters are allotted to Swiss stations. We shall notice in detail only Chapters IX. and XIV., devoted respectively to Teneriffe and Davos.

The greater part of the Teneriffe chapter is occupied with a narrative of the author's "three weeks' bivouac on the Peak," which is interesting, though irrelevant. We shall confine ourselves to the medical aspects of the island, which belongs to Spain, and is 220 miles further south than Madeira. It is entirely volcanic, with but a thin stratum of arable soil over disintegrated igneous rocks. Vegetation is scanty, owing to the dryness of the climate, and water is very scarce. The principal product of the island has hitherto been cochineal, but the price of the dye has fallen considerably of late years, and the once brisk trade in it is decaying. The temperature is equable, the mean monthly temperatures on the coast ranging from 62·1° in February to 76·1° in July. The mean of the year is 68·5°. The difference between mean day and mean night temperatures lies between 7° and 9° in summer, and 11° and 14° in winter. The mean winter temperature is 64·7°, the mean summer 72·3°:—"By living near the sea in winter, and on the hills in summer, very nearly the same temperature will be experienced in both seasons." There is none of that sudden cooling at sunset, which is so uncomfortable and so dangerous to invalids on the Riviera and in Egypt.

On three days in July the mean humidity of the atmosphere was 63·3 per cent., and this may be taken as a fair approximation to the relative humidity of the day in summer. The rainfall was 13·5 inches in 1875, and 15·9 in 1876. The six months, March to August, are the driest. The wind blows generally from the N.E.

As regards disease, Dr. Marcet states, on the authority of a physician who has long practised on the island, that acute diseases are milder and run a less rapid course than elsewhere; that intestinal affections, mainly diarrhœa, predominate; that these, though not serious, are very obstinate—a fact which his informant attributes to the consumption of unripe fruit, bad salt fish, and too many potatoes; that the nature of the food and the uniformity of temperature tend to induce a chlorotic condition; that wounds or surgical operations are hardly ever followed by erysipelas or pyæmia; that puerperal fever is very rare; that intermittent fever

became common after the cactus (for cochineal) replaced the vine; and that "skin diseases" are prevalent.

We have specially noticed Teneriffe, because we think the island, not having yet become fashionable, may suit a quiet class of invalids, who do not care for either the larger society or the greater expensiveness of the better known resorts of English valetudinarians. Dr. Marcet says:—

"I am inclined to believe that Teneriffe will eventually become a favourite station for consumptive invalids; and even at present those who can put up with fair, though perhaps not luxurious, accommodation, may find acceptable quarters at Puerto Orotava and the Villa Orotava, while there are pretty good houses to be had at Laguna. I do not think the English would quite like the Spanish hotel accommodation at Santa Cruz, but I believe comfortable houses can be had in the town; it will be necessary, however, to put up with Spanish cooking and Spanish attendance."—(P. 306.)

Davos has become a favourite health-station within the last few years, and a few particulars of its climate and advantages will be interesting. Dr. Marcet visited it last summer, and has devoted his concluding chapter to a description of it. The Davos valley is 5,100 feet above sea-level, about ten miles in length, and half a mile wide. At the northern end is a small lake from which a stream issues, and this is reinforced by two other streams flowing from lateral valleys. In summer the surface is a flat expanse of green turf, probably excessively watered, and tending towards swamp; in winter the whole is covered with snow. The valley is partially open to the north and the south, and sheltered on the east and west by mountains rising to a height of about 1,500 feet.

It was in 1862 that Dr. Spengler's observations on the freedom from phthisis of the inhabitants of high Alpine regions drew attention to Davos, and induced consumptives to visit it. Phthisis was, he stated, very rare amongst the people of the valley while they remained in it; while those of them who settled in towns below the mountains frequently returned phthisical to their native valley, and rapidly recovered there. From this beginning the fame of Davos grew, until in 1879 there were "seven first-class hotels, thirty boarding-houses, and a few villas; and seven hundred patients wintered in that health-resort." Last summer Dr. Marcet was informed that "over a thousand people, mostly invalids, spent the winter 1881–82" in the valley. It is as a winter station that Davos is likely to be beneficial, and the hotels are adapted to winter

visitors. As to the class of cases to which Davos is suitable, our author says:—

"Great discrimination will be required as to the selection of cases likely to do better at Davos than on the Riviera or any other station of that class. The main point will be to ascertain whether there are any symptoms present of an inflammatory character, and whether the general state of health will allow of sufficient power to react against cold. From the tendency to inflammatory affections known to exist in high Alpine stations, it may be safely concluded that patients liable to symptoms of that description, having, for instance, suffered from pneumonia or pleurisy, or being attacked with bronchitis of an acute form, ought not to be advised to resort to such places as Davos. People suffering from any affection of the heart should be equally careful not to reside in an Alpine station at any time of the year.

"Invalids will do well to leave early enough for their winter resort to become acclimatised before the cold weather sets in. The end of August or beginning of September is quite late enough. The winter season commences about the middle of October, when the snow begins to fall (Williams). It. is questionable, however, whether the snow actually commences to lay [*sic*] permanently on the ground till between the 10th and 15th of November; its usual depth is from two to four feet. It is very important for consumptive invalids to leave the valley before the snow begins to melt—at all events as soon as it has commenced melting, as at that time they usually begin to feel less well."—(P. 389.)

We are indebted to Dr. C. T. Williams for information, quoted by Dr. Marcet, upon the winter climate of Davos. The difference between day and night temperatures is remarkably great. Thus, in 1879–80, in the seven months, September to March, the mean highest day temperature in shade was 39·4°, the mean lowest night temperature was 15·3°, and the mean of the differences was 22·8°. "The high temperature of the sun's rays is very remarkable." In November and the three following months of the period of Dr. Williams' observations, the maxima of black-bulb temperature *in vacuo* were 157·0°, 147·0°, 141·0°, and 166·5°; so that "the direct rays of the sun in the daytime at Davos may feel actually too warm to be comfortable, while the air may be freezing in the shade." The atmosphere is extremely dry, the average percentage of humidity in January, 1880, for instance, being only 40. The air is found to be much drier in the middle of the day than in the evening or the night. Rain is almost unknown in winter; and the snow falling on the clothing does not melt, on account of the lowness of the temperature, but can easily be shaken off. Winds are rare.

2. Dr. Prosser James presents us with a fifth edition of his chatty, lively volume, which in a few pages contains a vast mass of information. The springs of Vichy are so well known that it is not necessary for us to say much on the matter. The *brochure* will form agreeable home reading; and if anyone going to Vichy reads it two or three times over *en route*, he will, on arriving, find himself quite an old inhabitant. Dr. Prosser James has published an account of the mineral springs of Europe, in co-operation with Professor Tichborne, of this city, and his present effort is quite equal to his former one.

3. Nearly as well known in latter years are the waters of Aix-les-Bains, so much resorted to by rheumatic and sciatic sufferers. D. Léon Blanc, in faultless English, describes the various springs and their mode of application; and we have no doubt that his book would be useful for medical study on the spot. From personal observation we can state that the Aix baths are a very delicate matter, and that a physician ought not to recommend them, or a patient employ them, without reference to local advice as to the exact *modus medendi*. Dr. Blanc's little book is carefully and well compiled, and nobody should go to Aix without it.

4. Contrexéville, a place until now almost unknown to us, but which seems likely to make its mark in balneal therapeutics, is situated 232 miles (about 300 kilometres) from Paris, on a branch line of the railway from the French Metropolis to Belfort. This branch was opened the year before last, and supplied these hitherto hardly known springs with that all-essential requisite to a watering place—viz., readiness of approach; and it is now quite easy to breakfast in Paris and dine at Contrexéville. These springs have in latter years been gradually acquiring a local reputation, and their launching forth to the world was one of the last economic efforts of the men of the Second Empire. In the year 1864 M. Fould, the great financial minister, derived much benefit from them, and soon after, wishing that his pocket should follow the example of his health, got up a syndicate of capitalists, who did all that was necessary in the way of hotels, a cure-house, and means of amusement.

The present volume opens with a topographical description, from which we learn the particulars and prices of the hotels and lodgings of Contrexéville. We further glean that there is a theatre, library, bath-house, and all the other resources of civilisation usual in such

places. The springs are of a calcareous character, and are found very beneficial in diseases of the kidney, especially complicated with gout. They are also very serviceable in diseases of the liver, being both of an alkaline and of a deobstruent and purgative character. They are mild and safe; and we consider that there is a future before them, and shall take an early opportunity of investigating them on the spot. They are also slightly ferruginous.

Dr. Debout D'Estrées' little book is drawn up in very correct English, with here and there a slight Gallicism betraying its foreign production. Although published in London, it is printed in Paris; and there are, no doubt, other foreign editions for various countries. We have, in the three kingdoms, several valuable medicinal springs, and it is much to be desired that we should push them in foreign countries with the same energy and enterprise that are displayed by the medical faculty of Contrexéville.

5. Dr. Vintras may be congratulated on having made a substantial contribution to the bibliography of hydro-therapeutics and of climatology in his work on the "Mineral Waters of France and its Wintering Stations." He writes in a pleasant, easy style, and in excellent English, so as scarcely, if at all, to betray his nationality.

The book opens with an Introduction, extending to thirty pages, on the study of mineral waters, which are (on page 4) defined to be "natural waters which are employed in therapeutics, in consequence of their chemical composition or temperature." It is this allusion to "temperature" apparently which leads Dr. Vintras to use the word "thermal" in a sense which is quite new to us, and which is certainly not justified by its etymology. Thus, within the compass of a single page—the third in the book—he speaks of "thermal treatment," "thermal therapeutics," "thermal stations," and "thermal medication," making use of the term as the adjectival synonym for "mineral waters." In olden days *Αἱ Θέρμαι* (*Latine:* Thermæ) were celebrated hot springs in Sicily, and indeed all *warm* springs were called *Thermæ*. Again, the adjective "thermal" (thermalis) means relating or appertaining to heat or warmth, so that "thermal waters" strictly signify *hot* or *warm* natural waters, like those of Pfeffers (Thermæ Fabariæ), or of Plombières (Thermæ Plumbariæ).

When discussing the question of the temperature of mineral waters (page 6), Dr. Vintras coins the word "thermality," which

he defines to be the "natural *heat* of mineral springs," so reverting to the original significance of the root.

In a section on the chemical constitution of mineral waters, the author draws a distinction between *organised* and *organic* matters. He writes:—

"*Organised* matter is composed of an amorphous substance, without consistency, of various colours, appearing only under the influences of air and light (above all, of solar light), and showing signs of organisation in cells or filaments. This is what is called *barégine* or *glairine*.

"*Organic* matter is in a more advanced stage of organisation, and is represented in mineral waters by confervæ of the *phycean* class, which attract and hold the iodine of the waters, as the fucus does the iodine of the sea. They have been called *sulfuraires*, because they are formed chiefly in sulphureous waters, and sometimes in extraordinary proportions."—(Page 12).

Dr. Vintras adopts Professor Durand-Fardel's new classification of mineral waters, consisting of the following "groups," viz.:—(1) Sulphuretted waters, (2) chlorinated waters, (3) bicarbonated waters, (4) sulphated waters, (5) indeterminate waters, including simple thermal waters and feebly mineralised waters, and (6) a supplementary group—namely, ferruginous waters. This classification is based upon the predominance of a chemical principle—that is, of a salt; and as the chemical and therapeutical characteristics of a salt are chiefly derived from its acid, the grouping of mineral waters is fixed by a consideration of the acids which are contained in them. The relative predominance of the bases serves to establish divisions or classes within the groups. There are, for example, *sodic*, *calcareous*, and *magnesian* waters. The author points out that, according as we descend from the first group (that of the *sulphuretted* waters) to the last (the *indeterminate*), we find their characteristics becoming less marked, and their therapeutical effect growing feebler. Similarly, in each group, as we pass from the *sodic* divisions to the *calcareous* or *mixed* divisions, we find their application subject to less distinct indications, and producing less energetic effects. The class of ferruginous water is not included in the foregoing observations, and is called *supplementary*, because it stands outside the groups based upon the predominance of one or other of the four acids—carbonic, sulphuric, hydrosulphuric, and hydrochloric.

In a section on the physiological and therapeutical actions of mineral waters, Dr. Vintras gives a table of their *specialisation*—a

term which signifies that "mineral waters which are grouped together by the community of one predominating principle, possess at the same time identical therapeutical properties." In this table we meet with such new words as "herpetism" and "lymphatism."

Having explained the modes of administration of mineral waters—namely, by baths, or as drinks (at the *buvettes* or drinking fountains), or, lastly, by means of douches and inhalation, Dr. Vintras brings a long introduction to a close with a description of the geographical or regional distribution of the mineral springs of France. He divides what he calls the "Thermal Stations" of that country into six great groups as follows:—

"I. *Central Division*, including Royat, Mont-Dore, La Bourboule, Chatel-Guyon, Châteauneuf, Vichy, &c.

"II. *Pyrenean Division*, comprising Eaux-Bonnes, Eaux-Chaudes, Cauterets, Barèges, Bagnères-de-Bigorre, Bagnères-de-Luchon, Ax, and many others of less note.

"III. *Southern Division and Corsica*, including the mud-baths (*boues*) of Barbotan, the hot alkaline springs and mud-baths of Dax; with the Corsican sulphureous waters of Pietrapola, Puzzichello, and Guagno, and the cold ferruginous springs of Orezza.

"IV. *Eastern Division*, among which the most famous baths are those of Bourbonne-les-Bains, Plombières, Luxeuil, Contrexéville, Martigny-les-Bains, and—in Savoy—Aix-les-Bains and Marlioz.

"V. *Northern Division*, including the calcareo-sulphuretted cold springs of Enghien, 'situated at the gates of Paris;' Pierrefonds, and the sulphurous mud-baths and calcareo-sulphated springs of Saint-Amand, the thermal establishment a mile from which is 'one of the finest in France.'

"VI. *Western Division*, almost entirely destitute of thermal establishments, having only two, that of Bagnoles-de-l'Orne and that of Château Gonthier."

Time and the space at our disposal would fail us were we to give more than this scheme-analysis of the main portion of Dr. Vintras' book. He disposes of the "Wintering Stations of France" within the narrow compass of twenty-eight pages. What he does say, however, about such well-known places as Arcachon (Gironde), Pau ("the most renowned of all the Pyrenean health-resorts"), Biarritz, Hyères, Cannes, Nice, and Mentone, makes us the more regret the very superficial character of this portion of the volume. In fact, we think the author would more profitably to himself and to his reader have omitted all mention of mere wintering stations in a work which is essentially one on mineral waters.

In his "Conclusion," Dr. Vintras gives some excellent advice to invalids going to the mineral waters, and to persons wintering abroad. In an "Appendix" he shows how the mineral springs of France offer to the public a double guarantee:—

"First.—The official analysis of the waters, which is obligatory before their use is authorised.

"Second.—The constant supervision of medical inspectors appointed by the Government."

A capital list of "Itineraries" from Paris to the chief French mineral waters brings an excellent book to a useful termination.

A Manual of Pathology. By JOSEPH COATS, M.D. London: Longmans, Green, & Co. 1883. 8vo. Pp. 902.

OF late we have been depending for our pathological literature chiefly on foreign sources, for since 1875, when the second edition of Dr. Wilks' "Lectures on Pathological Anatomy" was published, there has appeared no English work on this subject having any pretension to completeness. It is therefore with great pleasure that we welcome the excellent manual of Dr. Coats, which cannot fail to occupy a most distinguished place among the best works on pathology.

The comprehensiveness of this manual is very great, for it deals not only with pathological anatomy, but also with general pathology, and treats of such morbid conditions as uræmia and diabetes, in which there is as yet but little to describe in the way of anatomical change.

There are certain points on which we differ from the author, as, for instance, we are not prepared to admit the large part which he supposes to be played in the inflammatory process by increased adhesiveness of the white corpuscles—a condition which, we think, has been proved not to exist by Lister, and which we believe to be quite unnecessary for the explanation of the phenomena; nor can we accept his theory of the causation of the cardiac hypertrophy of Bright's disease, which we find far more difficult to understand, and far less in accordance with the symptoms of the disease, than is the theory of Cohnheim, which it is intended to replace. Nevertheless, after a careful examination of the volume, we have no hesitation in recommending it to our readers as a work of first-class merit, and one which should be in the possession

of everyone who wishes to know the present condition of the important branch of medical science with which it deals.

In its arrangement the work presents little which calls for notice. In the first part are sections on Morbid Conditions of the Circulation and of the Blood; Inflammation; Retrograde Metamorphoses; Hypertrophy, Repair, and Regeneration; Infective Tumours; Tumours or Neoplasms; and Parasites. In the last section we find a very full account of bacteria and of their share in causing the different diseases with which they are associated. Actinomycosis, which is described in an appendix, is classed among the affections caused by the higher fungi, which seems a more natural arrangement than that by which it is placed with the infective tumours, as has been done by Ziegler.

The second part contains the special pathological anatomy of the different organs of the circulatory, nervous, respiratory, digestive, and genito-urinary systems; of the bones and joints, and of the skin.

The book is well printed, and contains 339 wood engravings. A good many of these are derived from other sources, but the majority are original. They are rather rough, but still fairly demonstrative. There is a good index.

The Electro-Magnet and its Employment in Ophthalmic Surgery. By SIMEON SNELL. London: J. & A. Churchill. 1883. 8vo. Pp. 94.

MR. SNELL, who has, before this, on several occasions urged the importance of the electro-magnet as a therapeutic agent in ophthalmic surgery, has now re-cast his former essays, and added to them as much additional information as he could collect. The product is a neat little volume containing 94 pages, printed in good, clear type, and bound in cloth. In his preface the author states that his original intention was to publish the essay in one of the periodicals, as he had done before, but "the full details of the cases, with the remarks they called forth, as well as those upon the use of the electro-magnet generally, extended to a greater length than could be conveniently published in such a manner."

We cannot but regret that the author deviated from his original intention, for it seems to us that the subject is too limited to deserve a separate volume, and that much of the present volume might, without loss, have been omitted.

The author, beginning with a title-page, a preface, and a table of "contents," proceeds to give a historical account of the introduction of the magnet in ocular surgery, the honour of which he assigns to Fabricius Hildanus in 1646. Next follows a description of the author's electro-magnet, and a brief account of all the other instruments in use. The full details of each and every case which had come under the author's care is then added, and the value of the instrument as an aid to diagnosis considered. Referring to the sensation of discomfort sometimes experienced when the magnet is brought into close apposition with an eye-ball containing a piece of steel or iron, he is inclined to regard this sign as an uncertain, and by no means reliable, aid to diagnosis. Ten pages are devoted to the magnetic needle and its value in diagnosis, and the remainder of the volume contains summaries of cases, in which the magnet or electro-magnet had been used, occurring in the hands of other operators.

Considering how little material he had to work on, Mr. Snell must be congratulated on the success with which he has accomplished the book-making task he undertook; and those who wish for the fullest details regarding each and every case hitherto recorded, in which the electro-magnet has been used, cannot do better than consult this very carefully compiled and admirably arranged work.

What to do in Cases of Poisoning. By W. Murrell, M.D. Third Edition. London: H. K. Lewis. 1883. Pp. 226.

Dr. Murrell's admirable little compendium has deservedly met with a ready sale, and we cordially recommend this improved edition to the notice of our readers. No house-surgeon nor hospital resident pupil should hesitate to procure a copy for himself.

Vegetable Alkaloids, and the Methods of their Separation. By Matthew Hay, M.D. Edinburgh: Maclachlan & Stewart. 1883.

Within the limits of a few pages, Dr. Hay has succeeded in compressing into an interesting and instructive form the present state of knowledge regarding the characters and modes of separation of the vegetable alkaloids, and we commend his pamphlet especially to those interested in pharmaceutical chemistry.

Clinical Manual; compiled for the Use of Students in the Madras Medical College. By SURGEON-MAJOR C. SIBTHORPE, F.K.Q.C.P.; Resident Medical Officer, General Hospital, and Professor of Pathology. Second Edition. Madras: Higginbotham & Co. 1883. Pp. 224.

SURGEON-MAJOR SIBTHORPE (who is now Professor of Anatomy in the Madras Medical College) has compiled a most valuable clinical manual likely to be useful, not to students only, but also to the isolated practitioners in charge of hospitals or dispensaries who are now dispersed throughout the Madras Presidency.

Each of the twenty "districts," corresponding to, though much larger than, our counties, is divided into "talooks," which we may compare to our baronies; and in each talook there is a dispensary, and sometimes a small hospital, in charge of a subordinate medical officer. It is easy to understand how useful to such a practitioner this manual of diagnosis will prove, possessed, as he is, of a rudimentary library, and far out of reach of adviser or consultant. When the first edition of this work appeared, the Surgeon-General recommended it strongly to the Local Fund Boards and Municipalities, under whose control the dispensaries are placed, and most of these authorities at once supplied copies to their medical officers. In this second edition the book has almost outgrown our recollection, and its usefulness has been very much increased—so much so, indeed, that it is not too much to say that practitioners of a higher order than the subordinate grade might consult this manual with advantage.

The first three parts relate to the General Hospital, Madras, an institution containing over 200 beds, with five medical officers attached to it, and supplying to the students of the adjacent medical college clinical instruction in medicine and surgery. The formulæ in use, the dietaries, and the rules concerning both, are fully given. With Part IV. begins the clinical portion of the manual. Seven chapters are devoted to general instructions for clinical examination, and fourteen to special branches of clinical inquiry. These include diseases of the skin, the nervous system, the mind, of women and children, of the eye, the ear, the throat, the rectum, and the bladder, examination of the urine and other excreta. A chapter is given to the terminations of disease, and one to autopsy; and Chapter XXIV., which is freely and creditably illustrated, is allotted to microscopic examination.

Poisons and antidotes are treated of in Part V.; and an Appendix contains information on sponge-grafting and some other subjects.

It is much to be regretted that the author's printer and publisher have not done him justice. Neither typography nor paper is so good as Professor Sibthorpe's industry and ability, and their results, deserved. Half a page of errata is very far indeed from exhausting the too numerous misprints; and the printer has even been guilty of the barbarism of printing a page of ordinary letterpress on the back of part of a temperature chart! We hope to notice, before long, a third edition free from such blemishes.

The New Sydenham Society's Lexicon of Medicine, and the Allied Sciences (based on Mayne's Lexicon). By HENRY POWER, M B., and L. SEDGWICK, M.D. Seventh Part. 1882.

THIS ponderous work wends its tedious way, and has at last emerged from the letter C, the present part covering the ground from Con—Ded. The parts already published would make a volume nearly three inches in thickness, which can scarcely represent more than a quarter of what the completed work will amount to. The mechanical execution of the work is extremely good.

The New Sydenham Society's Atlas of Pathology. Fifth Fasciculus. *Diseases of the Liver (chiefly of the Gall-Bladder and larger Bile Ducts). With Pathological Summary.* By DR. GOODHART.

THE first fasciculus of the New Sydenham Society's Atlas of Pathology was issued in 1877, and the members have now in their hands a tolerably full series of illustrations of diseases of the kidneys, suprarenals, liver, and spleen. The morbid conditions figured in the present part are syphilitic and lardaceous disease of the liver; abscesses in the liver; papilloma of the gall-bladder; cancer of the gall-bladder and liver, with an enormous dilatation of the cystic duct, which contained 240 gall-stones; and colloid cancer of the stomach involving the cystic duct.

Epitome of Skin Diseases. By the late TILBURY FOX, M.D., and T. COLCOTT FOX, M.B. Third Edition. H. Renshaw. 1883.

WE have looked over the third edition of this little book, which has been carefully revised, and we can congratulate Dr. Colcott

Fox upon having written an excellent and reliable summary of diseases of skin, clearly expressed, and in every way suited to the requirements of the student.

Part I. discusses general principles, Part II. deals with the description and treatment of the individual skin diseases, alphabetically arranged, and Part III. comprises a useful and well-arranged cutaneous pharmacopœia relating to baths, local applications, and internal remedies. A few misprints still mar the pages—*e.g.*, punctæ, leptothrix (for lepothrix), inflamatory, &c.

Practical Histology and Pathology. By HENEAGE GIBBES, M.D. Second Edition. London: H. K. Lewis. 1883. Small 8vo. Pp. 154.

THIS little book has undergone considerable enlargement in the second edition. This is due to the much greater space given to the Practical Pathology, which originally was all comprised in four short pages, but which now runs to fifty. The greater part of this is occupied by the subject of bacteria. We find an extract of seventeen pages from one of Dr. Klein's recent papers describing his methods of cultivating bacillus anthracis. This is followed by extracts from different journals giving the methods which have been proposed for staining the bacillus tuberculosis—a subject with which the author's name has been much associated, in consequence of an unimportant modification which he made in Ehrlich's method. He proposes now a further modification by which the double staining, which was formerly made in two operations, can be effected at once and very rapidly. This method is likely to facilitate the examination of sputa for clinical purposes. There is, finally, an extract from Dr. Ransome's paper, in which the discovery of bacilli in the breath of phthisical patients is announced. Besides this chapter, we find one giving directions how to seal up a preparation jar, how to mount a divided eye-ball in glycerine jelly, and a very sketchy description of how to prepare and mount sections of morbid growths.

In the first part of the volume the changes are less important. We still find great prominence given to the subject of double and treble stainings, chiefly with aniline dyes. We are surprised to find that a writer so much under the influence of these colours as Dr. Gibbes is, makes no mention of Weigert's method of staining the nerve-centres with acid fuchsin, and that the reader is given to

understand that the chief use of saffranin is to stain amyloid organs, while no notice is taken of its great value in staining the nuclear chromatin of dividing cells. In the section on amyloid degeneration, while several double stains are given which "should be tried," although we are not told what result is to be expected, we find methyl violet omitted, notwithstanding that this dye, which has been in use for years, gives of itself a double staining which leave nothing to be desired.

Of microtomes, Williams' instrument is the only one mentioned, and no account is given of the methods of embedding in paraffin and fixing the sections on the slide, so that several sections in order can be mounted under one cover-glass. We think that this, which is one of the most important advances in modern histological technique, should have been described. On the whole, although, no doubt, many useful hints may be found in this book, we think the second edition is not at all an improvement on the first.

Hahnemann, the Founder of Scientific Therapeutics. Being the Third Hahnemannian Lecture. 1882. By R. E. Dudgeon, M.D. London: Gould & Son.

This oration, which is a defence of Hahnemann upon oft-repeated and well-worn grounds, would scarcely call for comment in the pages of this Journal were it not for some remarks, which we quote as an additional example of the way in which homœopathic practitioners are "handicapped in medical controversy," to borrow from the author a phrase which he uses in another context.

Let modern pharmacologists prick up their ears, and abandon their vain investigations, when they read the following:—

"Remedies derived from the homœopathic *materia medica* are furtively introduced into practice and given on homœopathic principles in fractional doses. No opposition is offered to their introduction, provided the proposer makes no mention of the source of his inspiration, and can make it appear from some futile experiments on frogs or rabbits—which seem to furnish different results to every different experimenter—that they promote or destroy the inhibitory influence of some nerves, or that they retard or accelerate the movements of a heart removed from the body, or do something equally instructive. Anything of this sort suffices to give a kind of physiological imprimatur to a remedy, and so render it a welcome and valued addition to the old-school *thesaurus medicaminum*, but its true source is well known to all who choose to inquire."

Student's Guide to the Examination of the Pulse, and Use of the Sphygmogragh. By BYROM BRAMWELL, M.D., &c. Second Edition. Edinburgh: Maclachlan & Stewart. 1883. 8vo. Pp. 66.

IN this pamphlet much information will be found on the use of the sphygmograph, and much aid in the classification and interpretation of the different tracings which are to be obtained by this instrument. Among the various sphygmographs in use, the author gives the preference to Mahomed's modification of Marey's instrument, but he admits the advantages of cheapness and portability possessed by Dudgeon's sphygmograph, and gives a drawing and description of it, with full directions for its application.

After the description of the instruments, there follows an analysis of the pulse-curve as given by the sphygmograph, the explanation of the various elements of which does not differ materially from that given in most of the books on physiology, and which is equally with the latter, to our mind, simply unintelligible. We are surprised to find, in the work of one so well acquainted with foreign literature as Dr. Bramwell, no notice of the remarkable book of Dr. Grashey, "Die Wellenbewegung elastischer Röhren, u. s. w.," in which a theory of the pulse-curve is put forward, which is, at all events, capable of being grasped by an average mind. Having analysed the sphygmographic tracing, the author considers the varieties which the pulse offers in health and disease under the headings—Frequency, Rhythm, Volume, and Compressibility or Strength. We wish he had omitted the term strength altogether. It is one which, if it means anything, is equivalent to tension, but which is used by students without any clear meaning, and which it would be far better to abandon in favour of a word expressing unequivocally the most important character of the pulse.

The concluding sections are on the conditions of the arterial coats, and the modifications which the pulse-curves show by changes in the vessels, such as atheroma, aneurism, &c.

There are 78 figures illustrating almost all the varieties of pulse-tracings which are met with. Many of these are very instructive, but in all of them we think the primary elevation, or that which is called the percussion wave by Mahomed, and the primary ventricular wave by the author, is too marked a feature in the curve. Dr. Grashey has shown by conclusive experiments that when the movement of the parts of the sphygmograph exceeds a certain rapidity, the inertia of the spring and pen is such as to carry the

latter beyond the point to which it is raised by the artery. This is all the more likely to occur when the spring and the pen are not united into one piece, as is the case in the newer instruments of Marey, but where the pin rests on a knife edge, as in the sphygmograph of Mahomed, figured by Dr. Bramwell. From many years' experience of the older and newer sphygmographs, we feel certain that the primary wave is mainly, if not altogether, due to the instrument, and that the true summit of the curve is to be found in the so-called predicrotic wave. This is the opinion also of Dr. Grashey, and, as well as we can understand him, of Marey.

The last six pages are occupied by laudatory notices of Dr. Bramwell's book on the spinal cord, taken from various journals. These might, we think, have been omitted with advantage, or, at all events, not paged with the remainder of the pamphlet.

ACTION OF MIXED VAPOUR OF CHLOROFORM AND AIR.

PROF. PAUL BERT has shown that ʒijss. of chloroform vaporised in one quart of air will anæsthetise a dog; ʒvj. of chloroform in a quart of air will kill the dog. Wishing to know if the same effects would be produced in case the experiment is continued for several hours, by a particular arrangement he was enabled to protract the experiment during ten consecutive hours. Half a drachm of chloroform vaporised in a quart of air produces no appreciable result; ʒj. in one quart of air was respired without trouble, and with no diminution of sensibility, but there was a decrease of temperature amounting to four or five degrees.; ʒjss. to ʒij. in the same quantity of air produced a great diminution of sensibility, but this was manifested only after a considerable time; the temperature fell rapidly, and after seven hours of the experiment the animal died with a very low temperature. The temperature was always lowered in proportion to the duration of the experiment. In some cases the temperature was lowered and death took place before anæsthesia was produced. In these cases depression of the nervous system was not the cause of death. In whatever manner death is produced the heart always beats to the end. Chloroform does not act, then, upon the heart. Chloroform should be given intermittingly, and animals which have sustained a loss of blood are much more sensible to it, and much more likely to die under it than otherwise; and the safest procedure is to cause anæsthesia rapidly, and then give the anæsthetic in small and intermittent doses.—*Journ. de Méd. de Paris*, May 26, 1883; and *Medical News*, July 7, 1883.

PART III.

HALF-YEARLY REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.[a]

By RINGROSE ATKINS, M.A., M.D.; Medical Superintendent, District Lunatic Asylum, Waterford.

I. INSANITY IN GENERAL.

Alternation, Periodicity, and Relapse in Mental Disease.—Dr. T. S. Clouston, in the *Edinburgh Medical Journal*, has recently discussed this question at length, more especially in relation to the subject of circular insanity (*folie circulaire*). He says that a careful clinical study of mental diseases reveals the fact that there exists in by far the majority of all the acute cases, at some time or other, in some form or degree, during the course of the disease, a tendency to alternation, periodicity of symptoms, remissions or recurring relapses. Of the 338 cases of mental disease admitted to Morningside in 1881, 181 of them being cases of mania, and 129 of melancholia, the rest being general paralysis, dementia, &c., there was in 81 of the female cases, or 46 per cent. in that sex, and in 67 of the men, or 40 per cent. of that sex, relapse, alternation, or periodicity of symptoms in the course of their diseases. Many of the 338 cases were chronic on admission, so that of the recent cases the decided majority showed these symptoms. Fifty of the 129 cases of melancholia, or 39 per cent., and 98 of the 181 cases of mania, or 54 per cent., were alternating or relapsing, or showed diurnal, or monthly, or seasonal, or sexual periodicity. It may, therefore, be concluded that insanity in the female sex has more of this character than in men, and that the cases of mania have it to a greater degree than those of melancholia. In some cases it was a morning aggravation and an evening improvement, those being usually cases of melancholia; in a few cases of melancholia it was an evening aggravation. Of the chronic incurable

[a] The author of this Report, desirous that no contribution to the subject of Nervous and Mental Disease should remain unnoticed, will be glad to receive any publications which treat of it. If sent to the correspondents of the Journal, they will be forwarded.

cases, about 40 per cent. were subject to aggravations. The stronger the heredity the greater the aggravation. Dr. Clouston has never seen a single case of typical *folie circulaire* where there was not hereditary predisposition to insanity. It seems as if there were some brains so constituted as to be incapable of energising, except irregularly swinging between elevation and depression, like a bad electric light. The above facts and statistics refer to ordinary remissions; but the cases with such regular and continuous alternations as to be properly called *folie circulaire*, are infrequent. Out of 800 patients, now in the asylum at Morningside, there are only 16 of this kind, or 2 per cent., and of the last 3,000 new admissions, comprising about 2,000 fresh cases of insanity, less than 10 have, as yet, turned out of this character. But the cases are not included which have merely long remissions, or cases with relapses for the first year or two, or the demented cases with occasional spurts of excitement, or the women with a few irritable days at menstruation, though many of these are of the same essential nature as the most typical cases of *folie circulaire*, following the same laws of perverted physiological periodicity in an irregular way. Dr. Clouston has had under observation, altogether, about 40 cases of typical *folie circulaire*. Of these about one-half followed a more or less regular monthly periodicity; about one-third obeyed the law of seasonal periodicity, all in an irregular way; and the remaining sixth could be brought under no known law on account of their irregularity. One case, a lady, was for a year deeply depressed; then for several years quite well; then for seven years more deeply depressed; then for three months passed as sane, but was really mildly exalted; then was depressed for a year; has been exalted with all the typical symptoms of typical *folie circulaire* for two years. Though there are a few cases that begin with attacks of melancholia, yet, in Dr. Clouston's experience, at least 90 per cent. begin with attacks of maniacal exaltation. The ages of the patients on the first breaking out of the disease were all the way from 15 to 74, but everyone, except the one, began within the actively sexual and procreative period of life. He has no record of a woman beginning after the climacteric period of life.

As the termination of typical *folie circulaire* cannot be accurately determined till after the patients have died, it is impossible to give accurate figures; but of 40 cases, 5 ceased to be subject to alternation in old age after 60, 1 being after 80, 2 being women,

and the others, men, all left in a condition of mind and brain that might not be legally reckoned insanity, though in all cases there were some mental enfeeblement and a tendency to be easily upset, lethargy, and a want of spontaneity, and volitional power; another case terminated in complete dementia; 2 died of exhaustion during a maniacal period. Three things are sure about the prognosis:—1. Its utter uncertainty. 2. Recovery cannot be looked for at the climacteric period in many cases. 3. About 20 per cent. may be expected to settle down into a sort of quiet, comfortable, slightly-enfeebled condition in the senile period of life. Very few, indeed, become completely demented, though two have run on into chronic mania. The tendency to death is very slight. Dr. Clouston found on autopsy the usual secondary changes consequent upon fluxionary conditions, and regards the psychosis as one dependent on dynamic or bio-chemical changes.

The Curability of Insanity.—Dr. Pliny Earle publishes in the *Alienist and Neurologist*, January, 1883, some new observations based on the statistics of the past three years, drawn from the four State Asylums of Massachusetts. The series of tables which were drawn up in 1879 relate to *persons* and not to *cases*, and the further data now at hand prove the truth of the following conclusions, which had been previously arrived at, though from less reliable statistics:—

1. The reported recoveries are increased to an important extent by repeated recoveries of the same persons.

2. The recoveries of *persons* are much less numerous than the recoveries of *patients* or *cases*.

3. From the number of reported recoveries of *cases* or *patients* it is generally impossible to ascertain the number of *persons* who recovered.

6. The (formerly) assumed curability of insanity has been practically disproved by more extensive experience.

7. The proportion of recoveries has been constantly diminishing during a period of from twenty to fifty years.

Insanity in the United States.—In a late number of the *Journal of Nervous and Mental Disease*, Dr. C. L. Dana gives the following statistics respecting the insane population of the United States of America:—

There were in 1880, in round numbers, 89,000 (to 96,000) insane, which gives a ratio of 1·570 (1·520) of the population. The census ratio in 1860 was 1·1310; in 1870, 1·1100; in 1875, 1·953.

The population increased in the decade, 1870 to 1880, about 26 per cent., while the insane population has apparently increased over 100 per cent. As regards the distribution of insanity and its increase, the proportion of insane is greater in New England, where the ratio is 1 to 357. Here, however, the ratio of increase is becoming slower. In proportionate number of insane, after the New England and Pacific States, come the Middle States (1 to 446), then the Western States (1 to 570), and then the Southern (1 to 780). In 1881, 74 State and 14 large private asylums, with a capacity approximately for 31,900, but holding 39,145. At a very low estimate, therefore, American asylums are over-crowded to the extent of 10,000 patients, while there are about 50,000 who are not in any asylums at all. The amount of capital invested in these institutions is £8,000,000, an average cost of over £100,000. It takes about £1,600,000 a year to maintain them, or £16,400 for each institution, not including interest. Adding interest, the total annual expenditure for the care of the insane, amounts to £2,400,000. The annual cost per patient has been variously estimated at from £33 to £63.

Insanity from Measles.—Dr. M. J. Madigan (*Gaillard's Medical Journal*, October, 1882) reports the following two cases, which tend to support the views of Kräpelin and Clouston as to the influence of measles in the production of insanity:—Case I.—R. K., aged twenty-two years, single; no ancestral history obtainable; has always been inclined to "nervousness;" was perfectly well up to two days before coming under observation, when he was attacked by what was thought to be a severe cold, which was soon followed by high fever and the measles eruption. In twenty-four hours the temperature of the patient suddenly sank, and he began to complain that his sister had poisoned him. He heard at times, and chiefly on rising in bed, voices denouncing her crimes. On recovering from the measles, all these symptoms disappeared. Case II.—T. O., aged twenty-six years, single; father epileptic; mother has chorea. The patient had been a bright, healthy boy up to the age of sixteen, when he was attacked by measles. During the entire bronchial symptoms he coughed violently, and complained of a violent pain in the head. For three days thereafter he was delirious. He apparently recovered from this delirium—that is, he became quiet and peaceable, but was completely demented, having lost all knowledge of both recent and past events, and was unable to carry on an extended conversation, in which condition he

remained. Dr. Wick (*Cincinnati Lancet and Clinic*, March 10, 1883) reports a similar case. [Some little time since I was consulted respecting the case of a little boy, aged five years, who had become quite imbecile as the result of an attack of measles. He was a well-grown and finely-developed little fellow, without any indication of congenital deficiency, but since he had recovered from a severe attack of measles, three years previously, his mental powers, instead of advancing, had receded; he had lost the faculty of speech; had no knowledge of right or wrong; was wholly intractable, and was clearly suffering from the effects of arrested cerebral development and retrogressive changes in the higher centres.—*Rep.*] Dr. Wick also reports a case of temporary insanity from *scarlatina*. The patient was a young man. The eruption was considerable, and the case typical in its nature. When the fever subsided, the patient suddenly displayed casual hallucinations of a depressing nature, and was restless, sleepless, and loquacious. The psychosis lasted a week, the patient making a good recovery.

II. ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

The Corpus Striatum.—Dr. A. L. Ranney, in a paper on the corpus striatum, in the *Am. Journal of Nerv. and Ment. Dis.*, concludes, from anatomical investigation and physiological experiment, that the corpus striatum may be considered as a territory in which cerebral, cerebellar, and spinal activities are brought into intimate communication. It acts as a halting place for voluntary motor impulses emitted from the cerebral cortex. It enables these impulses to become modified, and possibly reinforced by currents derived from the cerebellum, and by its efferent fibres it transmits centrifugal motor impulses along the projection system to different groups of cells within the spinal gray matter, whose individual functions they tend to evoke. This ganglion then probably acts as a condensor and modifier of all motor acts, which are the result of volition, and manifests, through the agency of its satellites (the cells of the anterior cornua of the gray matter of the spinal cord), the outward expression of our personality. Without the influence of the cerebral hemispheres, it is also capable, by means of cerebellar innervation, of governing all the complex muscular movements required in maintaining equilibrium (co-ordinated movements). Finally, it may be presumed to possess the power of analysis of cerebral and cerebellar currents received simultaneously, and of

materialising them by the intervention of its nerve-cells, projecting them in a new form amplified and incorporated with the requirements of the general organism.

The Optic Thalamus.—In a paper by the same author, in the following issue of the *Journal,* he quotes from Luys regarding the optic thalamus thus:—" . . . . We are, therefore, led to consider the masses of gray matter, usually described under the name of 'optic thalami,' as essentially central regions, which are the bond of union between the various elements of the cerebral system. Through their tissues pass vibrations of all kinds—those which radiate from the external world, as well as those which emanate from vegetative life. There, in the midst of their cells, in the secret chambers of their peculiar activity, these vibrations are diffused, and make a preparatory halt, and thence they are darted out in all directions in a new and already more animalised and more assimilable form, to afford food for the activity of the tissues of the cortical substance, which only live and work under the impulse of their stimulating excitement."

Path of Fibres in the Spinal Cord.—Dr. Wasil Kusmin has made a number of experiments as to the path of the fibres in the spinal cord of the dog, and gives the following summary of his results, confirming in the main the results obtained by Woroschiloff, Ott, and R. M. Smith, with the same methods of study:—1. The lateral columns contain the sensory and motor fibres. 2. The anterior columns consist mainly of centrifugal fibres, which, after destruction of the lateral columns, are capable of assuming their functions to a certain extent. 3. The posterior columns are largely formed of centripetal fibres. 4. The gray substance contains no continuous path of conduction. 5. The sensory fibres from the lower extremities decussate in the cord. 6. After a hemisection of the cord, the motor nerves of the lower extremities preserve their function as high as the anterior roots of the nerves on the level of the section on the opposite side of the cord. 7. Vaso-constrictor fibres run only in the lateral columns.—*Am. Journal of Nerv. and Ment. Dis.*

Circulation in the Eye.—Dr. M. W. Af. Schulten has made experiments upon this subject in the Physiological Laboratory at Leipzig. He had an ingenious ophthalmoscope, which magnified the background of the eye thirty to fifty times, and an improved bulbous manometer. His results were as follows:—1. The elastic distensibility of the bulb is relatively greater when small degrees

of pressure are employed. 2. The amount of blood in the eye is directly dependent on the pressure in its blood-vessels. 3. Every increase of this pressure, whether induced by increased supply or venous impediment, produces hyperæmia. 4. Every decrease of blood pressure (ligature of the carotid, venesection, or debility of the heart) immediately produces anæmia of the eye. 5. The blood-vessels of the eye are subject to the influence of vasomotor nerves, which are partially conducted by the cervical sympathetic, and probably partially by the trifacial. 6. Notwithstanding the marked changes in the contents of the blood-vessels of the eye, the calibre and appearance of the same, especially the arteries, as far as they can be observed in the retina and chorioid, are little changed. The tonus of the vessels, however, is plainly indicated by changes in the diameter of both arteries and veins. From these results the general conclusions are drawn—that the circulation in the eye is subject to the same laws as everywhere, with the difference due to the anatomical construction of the eye; that with increased pressure, the decreasing distensibility of the sclerotic opposes every sudden and marked increase of the blood, and moderates the deleterious action that strong currents of that fluid could produce in this delicate organ. The course of the retinal vessels through the optic nerve, and the oblique course of the chorioidal veins through the sclerotic, probably serve to stay the otherwise too rapid exit of blood from the eye. He also investigated the circulation of the brain, principally by determining the intra-cranial pressure and measurement of velocity and inter-arterial pressure, and found the results analagous to those about the circulation of the eye. The dependence of the circulation in the eye on that of the brain is expressed by the following sentences:—1. Collateral hyperæmia of the brain is accompanied by the same in the eye, and manifests itself by increased intra-ocular pressure and slight dilatation of the blood-vessels of the retina and chorioid. 2. A passive (venous) hyperæmia induces the same of the eye only when the venous obstruction is central in the jugular vein, or especially when in the thorax. 3. Decreased arterial supply gives rise to marked anæmia of the eye, and decreased intra-ocular pressure. By injecting one-half per cent. solution of chloride of sodium into the subarachnoidal sac, with constant pressure, when the intra-cranial pressure rises to forty to sixty mm. Hg., a characteristic picture will appear in the eye. The excavation of the disc is increased as its floor is pressed forward (choked disc). These facts

are thought to be in entire accordance with affections of the brain in which an abnormal quantity of fluid has accumulated in the ventricles. Brain tumour influences the circulation only when it is complicated with exudation into the subarachnoidal space. The cause of the intra-ocular appearances, of which the most marked is choked disc, is the necessary encroachment of the cerebro-spinal fluid into the intervaginal spaces of the optic nerve, and the resultant compression of the arteria centralis retinæ, which was also produced experimentally. By concussion of the brain as by a padded hammer, the intra-ocular pressure exhibits an increase contemporary with that in the brain, but quickly falls below normal as soon as the blood pressure has fallen. On further blows it falls more, the intra-ocular blood-vessels show diminished distension, and become smaller. The cause of these phenomena is irritation of the medulla oblongata. The certain and only means of diagnosis between compression and concussion is by means of the ophthalmoscope.—*The Weekly Med. Rev.*

Functional Independence of each Cerebral Hemisphere.—Dumontpallier has demonstrated the functional independence of each cerebral hemisphere. Thus a subject, hystero-epileptic with left dyschromatopsia and sensitive to pricking in the left superior member, &c., was put into a state of somnambulism by pressure on the head, and ordered to knit, which she did in a regular manner with the two hands. Pressure exerted upon the left lateral part of the vertex arrested the movements of the left hand, the right continuing the work. Pressure upon the right side of the vertex arrested the movements of the right hand. Pressure upon the median region of the vertex awoke her. This demonstrated that the median pressure had a simultaneous reflex action upon the two cerebral hemispheres, whilst unilateral pressure had no more than a crossed unilateral reflex action upon the hemisphere of the side opposite to that upon which the pressure had been exerted. In another experiment he proceeded as follows:—The subject had left hemianæsthesia for the superior region of the body, and right hemianæsthesia for the inferior region below the umbilicus, with left achromatopsia and right dyschromatopsia. This patient was put into a state of unilateral lethargy for the right superior region of the body, as was demonstrated by the calling out of cutaneo-muscular reflexes. By the action of light on the eyes right unilateral catalepsy was induced. By pressure on the median region of the vertex right unilateral somnambulism was induced.

The movements of command are executed only by the right arm. In a second experiment he applied upon the left frontal region a metallic plate (aluminum). After three minutes of contact transfer is produced; general and special sensibility are transferred to the left. The patient perceives on the left side colours, odours, and sound, with perception of taste on the same side. He induces then successively a state of lethargy, catalepsy, and somnambulism for the left superior part of the body, while the right side remains unmoved. In the first two experiments it results that hypnotism is only manifested on the side of the body where general and special sensibility actually exists; and as the sensibility perceived and the movement willed have their seat in the opposite cerebral hemisphere, it ensues that the peripheral irritation which brings back sensibility and motility on the paralysed side of the body is able to do so only by acting upon the opposite hemisphere. The transfer of cerebral activity has taken place from the left hemisphere to the right. In a third experiment, the patient being awakened, Dumontpallier found that the sensibility of the left side had a tendency to pass to the right side of the body. Before this spontaneous transfer was completed, he applied a metallic plate to either side of the forehead, and soon the sensibility was found re-conveyed to both sides of the body. In this state all the phenomena of the three periods of hypnotism have been experimentally verified upon both sides of the body. In the third experiment it is demonstrated that in fixing the sensibility of the two sides of the body by the application of metallic plates upon the two sides of the forehead, there has been determined and maintained a peripheral irritation necessary for the activity of each cerebral hemisphere. The functional activity of each cerebral hemisphere has been shown by the preceding experiments. He also demonstrated in other experiments that the phenomena of suggestion in the cataleptic state may be different for the right and left side of the body—the one side of the face has an expression different from that of the other. He also proved that in the state of somnambulism the illusions and hallucinations may be different for each cerebral hemisphere. It is known that there is a great hesitation about the real origin of the olfactory nerves and their conjectural decussation. In these experiments upon the crossed transmission of peripheral sensory impressions to the cerebral centres, the olfactory and auditory nerves act in the same manner as other sensory nerves. Hence experimental physiology

demonstrates a total or partial decussation of the olfactory, auditory, and optic nerves.—*Gazette des Hôpitaux. No.* 148. 1883. *Abstr. in Am. Journal Nerv. and Ment. Dis.*

Hypnotism.—Drs. Tamburini and Sepilli have made a series of studies upon the phenomena of motion, sensation, respiration, and circulation, in the state of lethargy, catalepsy, and somnambulism. In the state of lethargy there is a nervo-muscular excitability; in the cataleptic state the limbs are plastic. In the state of lethargy the tendon reflexes are exaggerated; in the cataleptic state greatly diminished. The paradoxical muscular contraction is produced in lethargy with the greatest facility, and not so readily in the cataleptic state. When the paradoxical muscular contraction is produced, either in the stage of lethargy or catalepsy, the passage from one state to the other resolves it. In the state of lethargy there is not complete analgesia; in catalepsy it is complete. In lethargy the ovary, when pressed upon, is hyperæsthetic; in catalepsy no pain is felt. In lethargy the respiration is regular and moderately deep; in catalepsy the breathing is slow, superficial, and irregular. When a magnet is used in the vicinity of the epigastruim, an apnœa results for a few seconds. In lethargy the blood-vessels of the extremities dilate; in catalepsy they contract, as is shown by the plethysmograph. When a sphygmograph is placed upon the carotid in a state of lethargy, a strong progressive augmentation of the height of the pulse-curve takes place if a magnet approaches the head. It has no effect on the pulse in catalepsy.

As regards these conditions, the authors have arrived at the following conclusions:—

1. That the cause of the nervo-muscular excitability, characteristic of the state of lethargy, the plastic flexibility of the muscles in the state of catalepsy, and the general contracture in the state of somnambulism, are no more than so many different manifestations of the increased excitability of the central motor apparatus, the proper and unique condition of hypnotism, which manifests itself under the different forms of exaggerated muscular tonicity, according to the duration and intensity of the stimuli which call it into activity.

2. In the hypnotic state, for the suspension of the voluntary centres of consciousness, the whole cerebro-spinal axis is found in a condition of exaggerated excitability, by which, through the action of suitable stimuli, there are easily produced hallucinations, suggestions, &c., in the sensory and psychical centres; and in the motor centres above mentioned, manifestations of augmented muscular tonicity.

3. In the special phenomena which accompany the cataleptic state of hypnotism as the slowing and suspension of respiration, the want of reaction of the muscles to all magnets, and the cessation of speech, are very probably due to the weak contracture of the respiratory and voice muscles, just as it exists in the other muscles.

4. The narrowing of the peripheral vessels, which is seen in the passage from the phase of lethargy to that of catalepsy, is certainly the effect of a vascular reflex produced by the stimulus which causes the passage from one state into another. This vascular reflex is analagous to that normally produced by external irritants. The dilatation of the vessels in a state of lethargy is due to the re-establishment of the circulatory equilibrium.—*Revista Sperimentali di Freniat. e di Med. leg.*

Sciamanna on the Excitation of the Human Brain—(*Arch. di Psichiat.*, 1882).—The author had the opportunity of applying both faradic and galvanic stimuli to the brain (chiefly through the dura mater) of a man who, in consequence of an accident, had lost part of the right parietal bone.

Excitation of the middle of the ascending frontal convolution produced contraction of the masseters and closure of jaws; of the lower third of the ascending parietal, raising of the left ala nasi and corner of mouth; of the posterior central fissure (between ascending parietal and inferior parietal lobule), flexion of arm and raising of eyebrow; of posterior portion of plica supra-marginalis (near inferior temporal convolution); rotation of head to left; movements of orbicularis palpebrarum of tongue and eyebrow.—*Brain.*

Maracci.—Experiments on the Cerebral Motor Centres (*Comptes Rendus de la Soc. de Biologie*).—Of the movements caused by electrical currents applied to the surface of the brain, the author sought to distinguish what are due to excitation of the cortex, and what to that of subjacent parts, medulla and cord, and arrives at the conclusion that the effects of excitation are not altered when the cortex is rendered physiologically inert. The author's chief results are as follows:—The movements excited by electrical currents at the surface of the brain are similar before and after the cortex has been frozen by the spray until it is as hard as wood. A similar indifference is observed in anæsthesia, provided this be not so deep as to involve the suppression of spinal reflexes, and in paraplegia, produced by freezing in a ring round the exposed medulla. Ligature of the brachio-cephalic and left carotid does not alter the effect of currents applied to the brain surface, but if chloral be injected, which can

now only act on the cord, cortical excitation becomes inefficacious. From these results the author concludes, that the cortical substance is physiologically indifferent as regards surface excitation, which acts only on deeper parts—viz., on the medulla and cord.—*Brain.*

III. NEURO-MENTAL PATHOLOGY AND PATHOLOGICAL ANATOMY.

Allochiria.—This peculiar nervous disturbance, characterised by a condition of crossed sensibility, was first studied, some little time since, by Obersteiner, of Vienna, who bestowed upon it the term, "Allochiria" (ἄλλος, χείρ). As an occasional symptom of locomotor ataxy, it had been previously incidentally mentioned by Leyden and one or two others. Of Obersteiner's four cases, two were of locomotor ataxy, one was hysterical, and the other was the result of severe and direct injury to the spine. Death ensued in this last case, and on *post mortem* examination it was found that there had been inflammation of the first, second, and third lumbar vertebræ, meningitis, and extensive transverse inflammation of the cord. The posterior columns, for a considerable distance above the seat of the injury, were in a state of sclerosis, and the posterior horns of gray matter in portions of the cervical enlargement, were "transversely divided by a peculiar structureless, transparent mass, intensely coloured by carmine, and very similar to the mass which is found round the larger vessels in inflammatory processes in the cord."

Hammond, in a paper read before the New York Neurological Society, is of opinion that to such a lesion of the posterior horns of gray matter as Obersteiner has described, the phenomena of allochiria are to be ascribed. Ferrier reports (*Brain*, Oct., 1882) a case of severe cranial injury, causing prolonged unconsciousness, followed by motor disorder of a combined, ataxic and hemiplegic character, from which the patient had only partially recovered at the time of his discharge, together with the temporary remarkable perversion of sensory localisation, characteristic of allochiria. In the case reported, there was an erroneous reference of sensory impressions to the corresponding part of the other side of the body. Besides the transposition of sensation, there was also a transposition of reflex actions. Tickling of the sole of the foot caused retraction of the other, while the foot actually tickled remained perfectly still; so, also, tickling of the inside of one thigh caused flexion of the other. Neither Obersteiner nor Ferrier offer any explanation of the production of this strange sensory disturbance. Dr. Hammond, in the paper referred to, advances an explanation, based on considerations

relating to the anatomy and physiology of the spinal cord. In those cases of disease, or injury of the posterior cornua of the gray matter, whether they be primarily involved, or secondarily, as in locomotor ataxy, in which allochiria exists, either the lesion must be unilateral, or, if both cornua are involved, the lesions must be at different levels. A sensation starting, say in the right lower extremity, would, in the normal condition, pass through the posterior nerve roots and posterior cornu, and there decussating, ascend at the opposite side along the sensory tract to reach the cortex, where it would be referred to its proper situation. But, suppose there is a lesion in the left posterior cornu, then the sensation would be directed through the gray commissural fibres to the right posterior cornu, and would reach the cortical centre in the right hemisphere, which is in relation with the left side of the body. The sensation coming from the right extremity would therefore be referred to the opposite side through its nervous connexions with the right hemisphere. This would constitute the condition of allochiria, in which all impressions made, for instance, on the right side of the body would be felt on the left, while those made on the left would be felt in their proper situations.—*American Journal of Neurology and Psychiatry.*

Petrina on Sensory Disturbances from Cortical Lesions.—The author reports six cases of cortical lesions in which there were sensory symptoms:—

1. Softening limited to the superficial layer in the insula; the lower part of the ascending frontal convolution, and the upper anterior part of the inferior frontal on the left side; no other lesions. There were paralysis of the right middle facial branch; aphasia, anæsthesia of the right upper extremity, right side of face and nape of neck (faradic test) analgesia, loss of sense of temperature.

2. Necrotic patch, size of pea, at the inferior third of fissure of Rolando; right side, the two ascending convolutions in the neighbourhood superficially softened; left hemiplegia and hemianæsthesia.

3. Superficial circumscribed (embolic) softening of left inferior frontal convolution; aphasia, middle facial paralysis; anæsthesia, as in Case I., in right arm and upper half of trunk.

4. Small circumscribed patch of softening in cortex of left ascending frontal convolution; the first three convolutions of the insula, and the anterior upper part of the superior, temporal convolution; right hemiplegia and hemianæsthesia; aphasia, ataxy of right arm after movement had returned.

5. Small hæmorrhagic tubercle, the size of a lentil, in the right superior parietal lobule; hemiplegia and hemianæsthesia of left side; hyperæsthesia to pressure and passive movements of left leg.

6. Caseous tubercle, the size of a hemp seed, in Broca's convolution, surrounded by small hæmorrhagic spots; aphasia, spasm of right arm and corner of mouth, followed by paresis; anæsthesia of right trunk to pricking and temperature; hyperæsthesia of right arm to pressure and passive movements.

The author, on the other hand, adduces two cases of extensive lesions, the one in the anterior, the other in the posterior cerebral convolutions, in which there was no sensory disturbance. Anæsthesia, due to lesions of the posterior third of the internal capsule, are characterised by their wider distribution than those just described.—*Brain* (from *Zeitschrift fur Heilkunde rep. in Neurol. Centralblatt*).

Cerebral Anœmia and Exhaustion.—Dr. S. G. Webber, of Boston, reports four cases illustrating the above conditions and remarks, that among the conditions of the brain most difficult for diagnosis, are those in which there is irregular blood supply. He quotes Jaccoud, who says that, "under the influence of anæmia and insufficient nutrition, the excitability of the nervous elements is diminished—that is to say, its effects are less energetic and exhaustion more rapid, but, by reason of the diminished vitality of the cells, the excitability is aroused by very slight causes which in health produce no reaction. The abnormal condition is then double; on the one hand the reaction is weak and of short duration, on the other it is produced by impressions that ought to have no effect. This double condition can be well expressed by the term irritable or excitable weakness." Dr. Webber goes on to say that this condition is found in all cases of badly-nourished brain, whether the defect is due to a blood-supply deficient in quantity or quality, or whether it may arise from an excessive supply of blood interfering with nutrition. The same condition may arise from exhaustion due to overwork of the nerve-cells, the supply of blood being nearly normal—that is, normal in comparison with the work required of the brain. As these conditions lead alike to defective nutrition of the brain, it is to be expected that many of the symptoms to which they give rise will be the same in one as in another condition. Thus the headache, vertigo, nausea, found in congestion, are also found in anæmia; the excitement, delirium, hallucinations, &c.,

found in hyperæmia, are also seen in anæmia; also the same symptom may be the expression of exhaustion or of poisoning of the blood. Much has been written about hyperæmia, and great stress has been laid upon too much blood flowing to the brain. Perhaps there are patients in which this condition exists, and yet, in by far the majority of cases, I believe the explanation of these symptoms is to be found in malnutrition from insufficient supply of food, or from inability to assimilate the food taken, or from exhaustion due to overuse, with too short periods of rest, or from inferior quality of the blood. The irritable brain may temporarily receive a relatively increased supply of blood, though its nutritive quality, or its amount, may be below that appropriate for health. Owing to the abnormal irritability of the brain, this excess over the usual supply is sufficient to cause excitement. This would be only a temporary, and perhaps a local increase of blood supply in an anæmic brain, and should not influence either the diagnosis or treatment.—*Boston Med. and Surg. Jour.*

Aphasia in Relation to Insanity.—The relation of aphasia to the mental condition of patients has often been discussed from a very positivistic standpoint. Dr. Rousseau, in a recent article (*Annales Méd. Psychol.*, Nov., 1882), comes, after an extended examination, to the following conclusions:—First, in general, insanity and aphasia are rarely encountered associated, and the explanation of the phenomenon must vary according to whether the insanity or aphasia be first developed. Second, the lesion resulting in aphasia often leaves the intelligence intact, but more frequently this is enfeebled but not prevented. Third, lucid aphasics may, like other people of course, become insane, but this is not of frequent occurrence. Fourth, as lunatics contract in time a cerebral inertia, true aphasia is not markedly evident with them, but simple loss of language may of course occur. The author, it will be observed, has not studied the phenomena of aphasia, as presented among progressive paretics, who are most likely, of all the insane, to be attacked by it.

Trophic Changes in Locomotor Ataxy.—Fresh observations continue to be made of disturbances of nutrition in association with locomotor ataxy. Besides the familiar diseases of the joints and bones, and perforating ulcer, there have recently been recorded peculiar affections of the teeth and nails, ending in their shedding. Thus Demange (*Revue de Méd.*, March, 1882) describes a case of tabes in which all the upper teeth fell out in a short time without

pain of the usual kind, but with darting "lightning" pains through the face, and disturbance of sensibility in the region of the trifacial nerves. *Post mortem* the floor of the fourth ventricle presented sclerosis which involved the nuclei of the ninth, tenth, and eleventh nerves, the restiform bodies, and some of the neighbouring parts; sclerotic change was distinctly seen in sections of the trigeminus where it leaves the pons. In another very similar case the loss of teeth was confined to the upper jaw. The *post mortem* appearances were almost exactly like those just enumerated, but more marked on the left side. One of the instances of loss of the toe-nails is given by Joffroy (*Arch. de Phys.*, 1882). The great toes were the members affected, and there was no accompanying pain; the nails simply looked dark with subungual ecchymosis. The part was soon restored. Pitres relates (in *Le Progrès Méd.*, No. 8, 1882) somewhat similar cases, in which, however, both great toe-nails were shed repeatedly; often deep-seated, dull pain, and a sensation was experienced in the affected parts for several weeks, and there was no ulceration or suppuration in these cases, any more than in Joffroy's, and the new nails were in every instance perfectly formed, with the exception of a few superficial irregularities. An interesting instance of necrosis of the phalanges of the two great toes in a case of locomotor ataxy is described by Dr. Russell of Birmingham, in the *Med. Times and Gazette.*

Case of Pseudo-Muscular Hypertrophy. By Dr. C. A. Pekelharing of Utrecht (*Virchow's Archives*, Aug., 1882).—This case, in which the author had the opportunity of examining the spinal cord, was that of a boy fourteen years of age. His mother reported him to have been born without any abnormal appearance. Soon after birth the disproportion of the size of his head to the rest of his body was very evident. His growth was tardy. He learned to speak only at three years of age. At four years his locomotion was imperfect: he limped and often fell. The calves of his legs were thick; and when he was five years old his arms were also large, but powerless. His hands and feet suffered from cold. He maintained a half-sitting, half-kneeling posture, the thighs firmly bent to the trunk, and the legs flexed on the thighs. Any voluntary movement was difficult. The muscles, though they felt large, were very feeble. They responded only to a strong electric current. The body, generally, was much emaciated; the thorax deformed. He suffered from disorders of the digestive and respiratory organs. He died from an attack of bronchitis after three days' illness. On *post*

mortem examination there were found traces of former disease in the lungs and pleura. The cranium was thick and hard.

Examination of the Spinal Cord.—The central canal in the cervical and dorsal regions was dilated and irregular in outline. Nuclei were accumulated, more especially where the canal appeared bent upon itself; in the lumbar region and conus medullaris the lumen was completely occluded by nuclei. On a level with the canal on both sides was a wide opening which communicated with the anterior spinal fissure, and contained a distended vessel which joined the anterior spinal vein. Throughout the length of the cord the anterior horns were seen to be deficient in nerve-cells, and these present only feebly coloured, whilst those in the lateral columns were unaltered. No change was perceptible in Clarke's posterior vesicular column. In some parts the connective tissue was thickened, but not symmetrically. The cells in one section were totally wanting. In the conus medullaris the cells of the lateral regions of the horns were degenerated. In the gray substance the vessels were numerous and distended, and here the degeneration of nerve-cells was most advanced. In this instance, as in those recorded by Clarke, Gowers, and Ross, with the atrophy of the muscles, was found degeneration of the cells of the anterior cornua of the cord. The question arises whether the muscular atrophy is the cause of the degeneration of the nerve-cells, or whether the pathological condition of the nerve centres is to be blamed for malnutrition of the muscular fibres. It would seem that the latter is the right answer. In the first place, it is not to be supposed that an inflammatory process could spread from the muscles along the spinal cord; neither the nerve-roots nor the white columns of the cord show any corresponding softening. The dilatation of the vessels and the abnormal state of the circulation in the gray matter may be assumed to be one cause of the atrophy of the muscles. Perhaps in the case before us we may go a step further. The patient had been the subject of chronic hydrocephalus. The thickness of the skull left less space for the fluid in the ventricles. The wide lumen of the cord was evidence also of a degree of hydrorrhachis, the fluid of which had gradually decreased. Were the spinal cord a soft walled tube the removal of its fluid contents would cause a collapse of its walls. This not being exactly the case, the walls of the central canal would yield towards its lumen, and the vessels of the surrounding structures would be affected by the diminished pressure. The vascular canals on both sides of the

central canal were extraordinarily large. The hyperæmia hence induced would, of necessity, influence the nutrition of all adjacent structures—a state of œdema might take place in the gray matter with a disintegration of the epithelial cells, filling the central canal. Thus we revert to the opinion of Duchenne as to the cerebral origin of this form of paralysis. Notwithstanding that many cases of pseudo-muscular hypertrophy have been recorded since Duchenne's time, the presence or absence of hydrocephalus has not been noticed, although, in some instances, this must have had considerable influence in its causation.—*Brain*, Jan., 1883.

The Morbid Anatomy of Infantile Paralysis.—Prof. Schultze (*Neural. Centralblatt*, 1882) had the opportnnity of examining the cord of a child who died three years after an attack of acute poliomyelitis. The case was a typical one, as testified by Prof. Erb and Dr. Höunan, who saw it from the outset. The atrophied muscles were chiefly the flexors of the foot and tibialis anticus on the right, the extensors of the foot on the left. The flexors of the thigh were also affected, as well as the triceps on both sides (slightly). The knee-jerk was present. The anterior horns of the lumbar region were much contracted; the lateral columns small and gray. Microscopically, the gray matter was found altered as far back as the substance of Rolando. The cells were much atrophied—in places completely absent. The walls of the blood-vessels (chiefly those penetrating by the anterior fissure) were thick, and here and there dotted with masses of blood pigment. The anterior and lateral columns show diminution of nerve fibres and increase of connective tissue, especially in the neighbourhood of the anterior cornua. Prof. Schultze insists upon the incompatibility of these changes, with the view which makes infantile paralysis a parenchymatous systematised lesion of the anterior cornua. The inflammatory process does not start from the cells or fibres of the cornua, but in the district of the anterior vessels. Acute poliomyelitis is a kind of acute myelitis, characterised by its limitation to the anterior and lateral regions of the cord. The changes in the white matter are of a different nature, as those of secondary degeneration, as well as regressive and differently distributed.

Circumscribed Anterior Poliomyelitis.—Eisenlohr, in the same journal, describes a case in which a number of muscles of the right arm and hand were degenerated, atrophied, and paralysed. Atrophy was present in the interossei; the thenar muscles were atrophied and paralysed. Of the muscles supplied by the musculo-spiral, the

supinator longus was healthy; the triceps and extensors much atrophied and paralysed. The pectoralis major and serratus anticus were also deeply affected. The deltoid, pronators, and flexors of forearm were somewhat wasted and weaker than normal. A careful examination of the cord showed it to be healthy, except in the cervical region, where between the sixth cervical and first dorsal roots, on the right side, there was evidence of sclerotic changes. These were confined at the upper part of the altered tract to the postero-lateral group of large cells. From the level of the lower fibres of the sixth root, the whole anterior horn was implicated as far down as the level of the eighth root, the lateral portion being most altered. The white matter was normal with the exception of the fibres forming the roots. The author concludes with some remarks concerning the spinal localisation of the motor centres of arm muscles. The escape of the flexors shows them to be innervated from above the sixth root. The implication of the triceps and pectoralis on the other hand proves them to derive their supply from the sixth to the eighth roots. The same remark applies to the extensors of the hand and fingers. The partial paralysis of the hand muscles agrees with the view that they are innervated by the eighth cervical and first dorsal roots. It is, however, difficult to explain the paretic condition of the long flexors and deltoid muscles. Unfortunately no examination had been made with reference to their reactions to the galvanic current.—*Brain.*

Vierordt on Atrophic Paralysis of the Upper Extremity (*Deutsches Arch f. d. klin Med.*, Aug. 1882).—The discovery of the influence of the anterior horns of the spinal cord upon the nutrition of muscles gave rise to a tendency to assume poliomyelitis in almost every case where muscular atrophy was a prominent symptom. A reaction in the opposite sense has lately become manifest, and Leyden has severely criticised those views, asserting the frequency of neuritis as a cause of atrophic paralysis. Morbid anatomy is by itself insufficient to solve the problem before us. A careful clinical analysis of a large number of cases is required. Nineteen cases are described by the author, who insists upon the importance of four points of view from which to compare the phenomena observed in each:—The chronological relations of paralysis and atrophy; the localisation of paralysis in the various muscles; the presence or absence of concomitant sensory disturbances; and the electrical reactions. Analysis of his cases in the light of these considerations reaches the following conclusions:—In peripheral paralysis of

traumatic origin the motor disturbance is confined to muscles supplied by the injured nerve, and is followed by atrophy ; loss of sensation is present when the lesion is severe, but usually occupies only a part of the district involved. Electrical reactions vary with the depth and date of the lesion; near the injured spot swelling and tenderness of the nerve testify to secondary neuritis; in peripheral neuritis the paralysis is usually confined to the province of one nerve; muscles innervated by nerves given off high up by the affected trunk may escape; paresis precedes atrophy but not always; sensation when diminished is not extensively so; reaction of degeneration occurs when the disease is severe, but the responses, if the various muscles involved differ greatly; there is frequently swelling and pain along the nerve; progressive muscular atrophy affects muscles either in a diffuse untypical manner, or according to physiological groups, usually beginning in the small muscles of the hand; atrophy and weakness progress together; reactions of degeneration are usually present, but not easy to demonstrate; there are no sensory symptoms ; fibrillary contractions are frequent ; anterior (chronic) poliomyelitis attacks physiological groups of muscles; atrophy secondary to loss of power in ordinary cases, but may follow a parallel course; there is no evident sensory disturbance; there are partial or complete reactions of degeneration electrically.—*Brain.*

Thomsen's Disease—Tonic Spasms in Voluntary Muscles—Muscular Spasms at the commencement of Muscular Movements—Hypertrophic Spasmodic Spinal Paralysis.—This peculiar affection, of which Dr. P. K. Chapman gives some account in *Brain*, April, 1883, does not appear to have attracted the notice of English authors, a fact which may be due in part to its extreme variety, and perhaps also to the fact that the only text-book in which it is described (Erb's vol. in *Ziemssen's Cyclopædia*) is practically out of the reach of most readers in this country. A passage occuring in Sir C. Bell's work—"The Nervous System of the Human Body," first published in England in 1830, and a few years later translated into German—has much attracted the notice of the authors who have written on this subject. The paragraph is slightly misconstrued in the German translation with which the authors are familiar. The original is headed "Affections of the Voluntary Nerves," and is here quoted at length:—"I could give cases of various affections of the voluntary nerves, but the patients might be made uncomfortable by a report of their condition. The most common instance is an impediment

in speech where the consent of the muscles is imperfect, but this sometimes extends to all the voluntary muscles of the body. I find that some are capable of lifting a heavy weight or walking fifteen or twenty miles, and yet they have not the proper command of their limbs; there is an insecurity and want of confidence in the motions of the body which overtakes them upon any excitement—a paralysis of the knees which prevents the individual from putting one leg before the other, and which endangers his falling. Thus a gentleman capable of great bodily exertion, on going to hand a lady to the dining room, will stagger like a drunken man, and in the streets any sudden noise, or occasion of getting quickly out of the way, will cause him to fall down, and in this manner a want of confidence produces a nervous excitement which increases the evil. With confidence the power of volition acts sufficiently—there is neither defect of speech nor irresolution in the motion of the limbs when the person is at ease or under a flow of spirits. Such cases are very curious in their details, as exhibiting an extraordinary incapacity for the affairs of life proceeding from slight defects. There is neither disease of mind nor of bodily organs; the corporal frame is perfect; the nerves and muscles are capable of their functions and proper adjustments; the defect is in the imperfect exercise of the will, or in that secondary influence which the brain has over the relations established in the body."

It will be observed that in the above description there is no suggestion of any *rigidity* or *muscular spasm* coming on at the beginning of any series of movements and passing off when the same movement is frequently repeated. The following description, given by Peters, of the behaviour of a patient suffering from what is known as "Thomsen's Disease," will serve by way of contrast: "If he has been for some little time at rest, he has to use great efforts before he can succeed in undertaking a voluntary movement. This phenomenon is specially remarked in attempting to walk. . . . At first he remains firmly rooted to the ground, notwithstanding a visible effort, so much the more if he knows he is being watched. At last he succeeds in drawing first one, and then the other leg forward. . . . Gradually he loses his stiffness and awkwardness, and at last his walk cannot be distinguished from that of a healthy person."

This stiffness, in the words of Leyden, is "characterised by the fact that the voluntary muscles do not readily obey the will, and that intentional movements are arrested half way, the muscles

remaining in a state of tetanic rigidity." There would be no need to proceed further to show that with regard to the kind of cases to which Sir Charles Bell refers, it is by no means clear that he had to do with Thomsen's Disease. It is true that some cases of stammering, accompanied with initial laryngeal spasm, have a close and interesting analogy with the affection to be presently described, but all such cases are very different from those arising from what is known as nervousness or diffidence, accompanied with and increased by a painful knowledge of the defect—such as are those alluded to by Bell.

A case related by MM. Ballet and Marie will be presented in detail:—"M. S., born in Cairo, came to Paris to consult Prof. Charcot. He asserted that he had only perceived the first symptom of his affection about the age of 10 years. At this time he found he was more clumsy than other children, that he was inferior to them in bodily exercises, and that after sitting down he had some difficulty in rising. He perceived no difference in his arms before his 15th year, and it was only at the age of 17 that his affection began seriously to trouble him. When about 12–15 years old he noticed that when he looked upwards, his eyes as it were became fixed in that position, and for the space of a second or two he had great difficulty in bringing them to the horizontal. [This phenomena disappeared about his 24th year]. At the same time (12-15), on turning his head to one side, it often became fixed in that attitude for some moments, owing to a stiffness in the muscles of the neck. There was also a hindrance to the movements of the tongue only coming on at intervals and obliging him to wait a moment or two to avoid stuttering. At times also he had the sensation of an obstacle at the level of the larynx, impeding the emission of sounds, with a feeling of construction at this level (possibly a spasmodic contraction of the muscles of the larynx analagous to that of the muscles of the body). He had never suffered from troubles of defæcation or micturition. The muscles of the face had never been affected.

Actual state.—When the patient wishes to make a movement, on a group of muscles entering into action, tetanic rigidity nearly always supervenes—a contraction of the muscles, lasting for one, two, or three seconds, accompanied by a painful feeling, the muscles being hard to the touch and standing out in relief. This takes place only at the commencement of any movement, when it is repeated for a certain number of times, and the limbs "*se sont*

échauffés " (are warmed or roused into action by the exercise) it no longer occurs. Thus, in mounting a staircase, the patient at first feels a stiffness in raising his legs. Then, after seven or eight steps, all stiffness disappears, and he can ascend like an ordinary individual. It is the same with the upper limbs—when the hand is closed he remains for some moments without the power to open it. This leads to bizarre situations. In getting on horseback, when attempting to engage the foot in the stirrup, the left leg is seized with the spasm; when this has ceased it is the right leg which is fixed in extension over the crupper—finally, all disappears, and he can place himself comfortably in the saddle. This transitory tetanic rigidity is diminished during digestion; is augmented by fatigue, emotion, vexation, and cold; also by lying on the back, and abstinence from coitus for eight or nine days (patient's own statement).

The muscles are very well developed, though one could not say they were hypertrophied; their consistence is normal in repose; pressure causes pain, they are more sensible to pressure than normal. The phenomenon of idio-muscular excitability (myoidema) is not presented by the biceps, but is distinctly obtained on the calf, and in a slight degree on the triceps of the thigh. Passive movements can be executed with great facility, and one cannot provoke tetanic rigidity by this means. Tactile sensibility and the tendon reflexes are normal.

An electrical examination was conducted by Dr. Vigouroux, who states that—

1. The muscles and nerves are less excitable—above all, less isolable (this fact being probably due to some physical cause affecting the diffusion of the current), than normal; farado-galvanic irritability below the mean.

2. There is no variation from the normal formula, except that for some muscles the anodic contraction is too easily obtained in comparison with the kathodic.

3. There is complete absence of break contraction.

4. The dominant fact is the facility with which the contraction provoked by the current becomes tetanic, diffusion of the current developing a spasm of the neighbouring muscles.

5. This persistence is produced still better by faradisation of a nerve trunk.

The authors have obtained a myographic tracing by which they establish the duration of the muscular spasm excited by the voluntary efforts to be 5½ seconds, which closely corresponds to the time

given by others (Seeligmüller 5 seconds); the spasm was not shown when the experiment was several times repeated.

Bernhardt states that the electrical reaction conforms to the ordinary formula, and notes the following particulars:—The contraction persists a little after the cessation of electrical excitation; during the flow of a faradic current a firm and durable tetanic contraction is not obtained, but undulations are produced which swell in one point to smooth out again, and reappear a little further off. Percussion with Skoda's mallet produces the same effect as electrical excitation of short duration; the sensibility is intact.

Vizioli also remarks that the induced current gives energetic contractions which last some seconds, although the stimulus be removed, there being nothing noticeable with the galvanic current.

The patients appear to have been, in all the cases collected, of good muscular development, and in many to have suffered from great muscular hypertrophy. (Seeligmüller, 3 cases; Bernhardt, Vizioli, &c.) Bernhardt points out that the hypertrophy is symmetrical. In his first case he at first thought he had to do with a case of pseudo-muscular hypertrophy; but it can in no way be confounded with the latter disease, in which the muscles are extremely weak, some completely atrophied; in all cases the peculiar spasm being absent. Portions of muscle have been excised and microscopically examined by Ponfick, Petrone, Jaenziel, and Grawitz, but nothing abnormal was discovered—speech is by no means always affected, though it has been frequently observed to be so. In Bernhardt's case of a student of law, the patient had sometimes great difficulty in opening his mouth with stiffness of the muscles, both of jaw and mouth:—"The movements of the tongue are not executed in every direction as easily as in a healthy person; speech is in nowise embarrassed." In this case there was enormous muscular hypertrophy, and there was—a noticeable point—*lordosis* of the lumbar vertebræ, as in two cases observed by Seeligmüller. This, however, is mostly absent, as in the case of M. S., and it may be more apparent than real. Bernhardt remarks that the psychical state was normal; it appears, however, that in the majority of cases the patient is of an irritable nature, suspicious, reserved, occasionally suffering from attacks of giddiness, &c. Thomsen, himself a sufferer from the disease, says:—"Bell errs when he asserts that 'there is neither disease of mind nor of bodily organs;' disease is there with all its symptoms." Bell, indeed, remarks that "the patients might be made uncomfortable by a report of their condi-

tion." That the patients have a reluctance to hold any communications with anyone concerning their condition is by Thomsen and others elected into a veritable symptom.

The disease has been caused in two cases by fright arising from fire at the age of seven (Peters), and from robbers (Benedikt); also from a fall from a carriage at the age of five (Bernhardt). In neither of these cases was there any suspicion of heredity. But the most interesting points in the ætiology of the disease are its presence in several members of one family, its occasional alternation with mental troubles, and its almost constant appearance in early infancy. In Leyden's case a brother was affected; in a case of Seeligmüller's one sister; in that of Strümpell two brothers. In Bernhardt's case an uncle suffered from epilepsy. Dr. J. Thomsen, of Kappeln Schleswig, himself a sufferer from the disease for over sixty years, describes in his most interesting and pathetic account how his great grandmother died of puerperal mania. She had two sisters; both suffered late in life from mental aberration. His grandfather attained the age of sixty-four, and had, by a healthy wife, four children, of whom Thomsen's mother was the eldest but one. The disease scarcely appeared in her or her elder brother, while it was strongly developed in her younger brother and sister. These two were weak in mind, but could fulfil the ordinary affairs of life. Thomsen's mother lived to the age of seventy-two. She had thirteen children, of whom seven were attacked with the disease; of the others a sister was slightly affected in mind, the rest were healthy. Of the children of Dr. Thomsen and his brothers and sisters, numbering thirty-six, only six were affected. He had met with no cases outside his own family in a practice of thirty-six years. In his own case he has noticed that when the body is warm through exercise the contractions are less marked. They are worse when the temperature is low or the body cold; in commencing chill; in the period of incubation, or the prodromal stage of acute fevers, and after muscular exhaustion. As to the primary site of the evil we are reduced to the statements of opinion. Thomsen suggests it is to be sought either in the spinal system, or perhaps in the brain itself. He feels as if the impulse which arises from the will is "not transmitted by the usual path in the ordinary way to the organ which it is desired to set into activity," or he would seek for "an original disease in the sphere of activity in the brain, the will." Seeligmüller, though no change has been met with, ascribes the seat of lesion to the lateral columns of the

cord, to which opinion Erb inclines, while admitting it can only be decided by further observation. The reflexes usually are normal. It is to be remembered that in some cases there is lordosis of the lumbar vertebræ; that in Peters' case the reflexes were much diminished; that of Benedikt's cases one suffered from vertigo and headache, and his second case was abnormally sensitive to pain; while in Vizioli's second case the patient "was subject to sudden vertigo," had pain over the lower lumbar and upper sacral vertebræ, radiating to the iliac bones without arriving at the nates, worse after walking, but not increased by pressure or by moving the limbs. No improvement has been recorded in any case.

Suggestions as to the Ætiology of some of the so-called System Diseases of the Spinal Cord.—Dr. Horatio Donkin, in an article under the above title in *Brain*, January, 1883, says:—"The *post mortem* study of such cases of spinal cord disease as end in death, and can be thoroughly examined, has at present given us but little direct help towards tracing their causation from the beginning. When we thus examine the body the mischief is already wrought; destructive lesions at most are demonstrated to us, though we may be led by a kind of natural inference to suppose some change in the cord antecedent to the symptoms and to the structural lesion before our eyes. But in the face of these facts, and though the morbid anatomist has made no general claim to teach us anything regarding the ætiology of the diseases to which we refer, it would seem that many are led to regard too exclusively the lesion found in the cord as the primary source of the malady in question, and so incidentally to limit the field of inquiry as to how these special diseases may be brought about. But little attention is paid to the possible ætiological antecedence of peripheral disturbance, or what may be called abnormal function, which by its continuance may set up the ultimate change in the structure of the cord, entailing all the morbid symptoms of the established disease."

IV.—NEURO-THERAPEUTICS.

The Treatment of Epilepsy.—Dr. Robert Saundby sums up an article on this subject as follows:—

1. The value of combining bromide salts with each other (sodium, ammonium, potassium, lithium and camphor) and with digitalis.

2. The value of zinc and cannabis indica as adjuvants to the bromide.

3. The use of borax in some cases which resist the bromides.
4. The employment of caffein, or thein, and nitro-glycerine in the treatment of epileptic vertigo.—*Practitioner*, February, 1883.

The Use of Tonga in Trigeminal Neuralgia.—Dr. T. H. Streets, U.S. Navy, reports upon the use of tonga in various forms of trigeminal neuralgia. The drug was first taken by himself, Drs. Kidder, Griffith, and Doering in order to determine the physiological effects. Doses of 4 c.c. were taken hourly until 16 c.c. had been taken. There was a decided decrease in the elimination of the urea. There was no change in the pulse, temperature, or pupils. The only constant subjective symptom was a certain sense of lassitude or muscular fatigue, not disagreeable or very decided. Two of the four experimentors noticed a tendency to cerebral congestion of short duration; one was slightly purged. It was then given to fourteen patients suffering from neuralgia of various branches of the trigeminus. All were soon relieved, except three. It was rather slow in action, requiring about two hours for the full effects. It was given in ʒi. doses, repeated at intervals of about two hours.—*Proceedings of U. S. Naval Med. Soc.*, 1883.

Nocturnal Enuresis treated by Voltaic Alternatives.—Dr. Julius Althaus reports the case of an apparently healthy, though somewhat nervous boy, aged fifteen, who suffered from incontinence of urine. He applied the middle-sized circular kathode over the region of the bladder, and the large oblong anode (five inches by two) to the lumbar portion of the spine. The current strength, 2·50 milli-ampères, for five minutes at a time. "As, after a few such applications, no material benefit appeared to have been gained, I then added fifty voltaic alternatives, produced in the metallic circuit. The night after this the patient was free from the usual annoyance, and has since made an apparently uninterrupted recovery. Althaus refers to the good results reported by Erb and Seeligmüller from the use of faradism and galvanism in enuresis.—*Brit. Med. Jour.*, Jan. 20, 1883.

The Comparative Value of Amyl Nitrite, Nitro-Glycerine, and Nitrite of Sodium in the Treatment of Angina Pectoris.—Dr. M. Hay relates the case of a patient, a printer, aged forty-two, who had for about two years been suffering from angina pectoris. He was given amyl nitrite, which produced very temporary and imperfect relief. He was then put upon nitrite of sodium in doses of two to five grains occasionally. This dose produced no physiological effect apart from the relief of pain. By using alternately the

sodium nitrite and the nitro-glycerine it was found that the latter, though better than the amyl, did not give such permanent results as did the sodium. Dr. Hay states that nitrite of sodium is very apt to be adulterated with the nitrate, to the extent even of two-thirds its bulk.—*Practitioner*, March, 1883.

Mixtures for producing Local Anæsthesia.—When equal parts of chloral and camphor are triturated together, a clear, somewhat viscid, transparent solution results. This solution has considerable solvent power, and will take up a comparatively large amount of morphia. Chloroform may also be added to it without precipitation of any portion of the dissolved constituents. Thus: ℞. Chloral, camphor, āā ʒij.; morphiæ sulph., ʒss.; chloroform, ʒi. This may be applied with a camel's hair brush over the area to be incised, allowed to dry, and reapplied as freely as may be necessary to render the part insensible to pain. Amongst the anæsthetic mixtures for surgical purposes proposed by Professor Redier, are solutions of camphor in ether and in chloroform. One drachm of camphor may be dissolved in two drachms of ether, or the same quantity in two drachms of chloroform. A useful anæsthetic mixture is prepared by the addition of crystallised acetic acid to chloroform in the proportion of one part of the acid to twenty parts of chloroform. These anæsthetic solutions are applied by the brush freely over the part of the seat of pain, or to be incised. In some instances it may be better to moisten a cloth, or some cotton, and allow it to remain for a time in contact with the part. Pure carbolic acid has an anæsthetic effect when applied to the skin.—*Phil. Med. News*, Feb. 10, 1883; *Am. Jour. Nerv. and Ment. Dis.*

The Treatment of Spinal Diseases.—Prof. Roberts Bartholow, in a lecture upon this subject, divides spinal diseases for purposes of therapeutical study into (1) acute inflammatory, (2) chronic inflammatory, and (3) nutritional diseases.

As regards the first class the use of ergot is deprecated, since it contracts the arterioles, but allows of stasis in the veins, which in the spinal canal have a capacity of four times that of the arteries. Instead of ergot digitalis is recommended, and we are told that it does more to restore the normal balance of the intraspinal circulation than any other remedy. After digitalis comes aconite, and then veratrum viride. Opium is indispensable for severe pain, and bromide of potassium to control excessive reflex action. When the stage of arterial and functional excitement is passed, remedies for the absorption of effusion and exudation are indicated. For the

former purgatives and diuretics are thought sufficient; for the more solid exudations the salts of ammonia in considerable doses are recommended. For the chronic inflammatory troubles (scleroses) the remedies are hot douches to the spine morning and night, cutaneous faradisation half an hour daily, the rubbing and wet pack, and Granville's percuteur (*vide* Report, Jan., 1883). Violent rubbing and kneading, says the author, do mischief. Galvanism is recommended by Dr. Bartholow with the descending current, The balance of authority, however, is now in favour of the polar method of electrical application. The author is convinced that the current method of Onimus and Legros is correct, but also confirms the high estimate placed by Erb upon his (polar) method The internal remedies which yield the best results in sclerosis are nitrate of silver and chloride of gold and silver. Many cases of chronic spinal disease are said to be due either to metallic poisoning or syphilis. Iodide of potassium and occasionally mercury are therefore often needed.

In the chronic nutritional diseases, senile, &c., cod-liver oil, the phosphates, strychnia, quinine, and electricity must be used.—*Am. Jour. Nerv. and Ment. Dis.*

Action and Use of Convallaria.—Dr. J. Troitzky, from experiments on frogs, dogs, and rabbits, concludes:—1. That convallaria stimulates the inhibitory centres in the heart, paralyses the motor centres, and does not affect the vagus. 2. That it lowers the temperature (in large doses). 3. That it diminishes muscular reflex action. Therapeutically it is indicated in valvular diseases of the heart, except where the organ is fatty. On theoretical grounds it is recommended as a vascular tonic to the nerve centres.—*Deutsche med. Zeitung*, Jan. 11, 1883.

Dr. William M. Polk reports a case of vagus neurosis remarkably relieved by convallaria. The patient was a young man of good history and habits, who was subject periodically to attacks of palpitation. The heart beat at the rate of 190 to 240 times per minute. The attacks, under digitalis treatment, lasted two or three days. There was no organic disease. Under ten minim doses of fluid extract of convallaria the heart action was very rapidly brought down, and all bad symptoms dispelled.—*N. Y. Med. Rec.*, Feb. 2, 1883.

Dr. Isaac Ott reports the results of experiments with convallaria upon rabbits and frogs. He concludes:—1. That convallaria increases arterial tension until very powerful doses have been taken.

2. That it at first increases then decreases the frequency of the heart beat. 3. That the latter effect is due not to the stimulation of the cardio-inhibitory centre, but to an effect upon the heart muscle. 4. That the drug causes clonic spasms. Dr. Ott's conclusions practically are in harmony with those of Troitzky, the latter designating as a local inhibitory centre that which Dr. Ott refers to the cardiac muscle itself.—*Archives of Medecine*, Feb. 1883; *Am. Jour. Nerv. and Ment. Dis.*

The Headache of Adolescents.—Charcot has given a clinical picture of the headache which attacks boys between the ages of eleven and sixteen. Aside from rest and general hygienic management, hydrotherapy is the most efficient single agent in its treatment.—*Progrès. Méd.*

On the Treatment of Infantile Paralysis.—Dr. Robert J. Lee calls attention to the very marked value of artificial heat in the treatment of infantile paralysis. This he illustrates by the case of a girl suffering from this disease in a severe form, who received no other treatment than hot sponging night and morning, and artificial heat to the limb after going to bed. This limb was equal in size to the sound one eight years after the attack came on, although still paralysed below the knee. Dr. Barlow refers to the fact that artificial heat is an old therapeutic method in the disease in question. He considers it always necessary to protect carefully the paralysed limbs, but believes that electro-therapy and voluntary and passive movements are much superior remedies to heat.—*Brit. Med. Jour.*, Dec. 2 and 23, 1882.

Paraldehyde as a Substitute for Chloral Hydrate.—Dr. V. Cervello reports the result of his experience with paraldehyde. He claims that it has a hypnotic power equal to that of chloral hydrate, without the disadvantages of the latter drug. Paraldehyde is a colourless fluid boiling at 124° C.; sp. gr. at 15° C. 0.998; it crystallises when cooled, melting again at 105° C.; it is slightly soluble in water. The formula is $C_6H_{12}O_3$. As a hypnotic its action is somewhat like chloral; yet, in ordinary doses, it does not depress the respiratory centres or the heart's action. Paraldehyde acts chiefly on the cerebral hemispheres, but to a less extent upon the medulla and cord. In large doses it paralyses the respiratory centres. The exact dose is not laid down. In some cases one to four grammes were sufficient, in others ten grammes were given without disturbance. The drug is best given in syrup solutions containing three per cent. The taste is not unpleasant.

Morselli and Bergasio, at the meeting of the Italian Medical Association, September, 1882, reported upon the use of paraldehyde among the insane. They found it a safe and efficient sedative and hypnotic in cases of mania, &c. The dose used was two to three grammés.—*Am. Jour. Nervetn. and M. Dis.*

TREATMENT OF TINEA CAPITIS.

1. The group of diseases (*Herpes tonsurans*, *Porrigo favosa*, and *Porrigo decalvans*) comprehended under this title, being recognised as parasitical dermatoses, their rational treatment must, of course, be directed against the parasites. Two modes of procedure fulfilling this condition have been found preferable:—*a.* Epilation, which exterminates the parasites by destroying the organic structure in which they make their habitation; *b.* The local application of croton tiglium, which accomplishes the same object by inflaming, without destroying, the derma and hair follicles, and thus removing the infested hairs. 2. In cases not too inveterate, a cure or decided amelioration is usually obtained within a period varying from three to eight months, and after from three to five applications of the remedy. 3. Clinical experience has shown that this treatment is not followed by any special tendency to relapse. 4. As to the other unfavourable results which have been charged to the employment of this remedy—viz., intense folliculitis, inflammation of the scalp and even the occipito-frontal aponeurosis, and erysipelas, it is precisely these evils which the croton-oil dressing, in the form recommended, is intended to avert. Neither the above symptoms, nor the alopecia which has been said to follow them, have been produced in any of our cases. 5. The only unpleasant consequences we have ever witnessed have occurred from the accidental transfer of the ointment to other surfaces, such as the conjunctiva, in which latter case a conjunctivitis might possibly arise; but this danger is easily obviated by protecting the scalp with a properly adjusted cap. We have never known such an accident to result in anything more serious than a slight conjunctival hyperæmia. 6. As to erysipelas, statistics show that it follows the croton treatment in an average of four cases out of a thousand, and that it has invariably been cured. These risks are insignificant when measured against the extreme pain which epilation inflicts upon a child, and when also the insufficiency of the latter method is considered, since the hairs almost always break off under the operation. 7. To sum up our subject, the results of treatment by croton tiglium dressing may be pronounced highly satisfactory in *herpes tonsurans*, and encouraging in *porrigo favosa*, and in certain cases of *porrigo decalvans*.—*Jour. of Cutan. and Vener. Diseases*, July, 1883; and *Medical News*, July 28, 1883.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

CLINICAL RECORDS.

A Case of Recurrent Gangrene of the Lung. By THOMAS AGMONDISHAM VESEY, M.B. Univ. Dubl., Rostrevor.

ON the evening of 3rd September, 1882, a gentleman, aged thirty years, came under my care. He had been sent to Rostrevor for change of air.

In June, 1882, he had a very fast walk to catch a train, and while sitting in the railway compartment, with both windows open, was thoroughly chilled.

History.—For ten days he went about as usual, though feeling very seedy. He had much pain in the right side of the chest, frequent cough, and rusty expectoration; evidently an attack of pleuro-pneumonia. In August he again imprudently exposed himself, and was laid up on the 12th August with an attack similar to the one in June. The disease attacked the right lung from the subaxillary and subscapular regions down to the lower margin of the lung.

I found the patient sitting up in bed racked with constant cough, and expectorating the most foul stuff I ever met with; the odour was pestiferous. Pulse 130, hard; respiration 40; and temperature 99°. No pain was complained of. With the stethoscope the respiration was found to be rough and insufficient at the back and subaxillary regions of the right lung, with an occasional minute and obscure crepitus (? redux), but no evidence of any fluid in the tubes, and no evidence of cavity. There was slight dulness on percussion; the left lung was perfectly healthy; there had been no hæmoptysis, and his health always very good.

He was put on quinine, creasote, and ext. opii. aquos, and ordered to inhale carbolic acid vapour frequently.

Next day (September 4) I found that he had a quiet night. Pulse 60; respiration 28; temperature 98·5°. Very little expectoration during the night, after ten o'clock. The expectorated matter was of the character usual in gangrene of the lung, and separated into three strata: a frothy

superficial one, a liquid middle one of reddish green-colour, and a lower sediment of grumous matter like coffee-grounds. The breath was now quite sweet, and the expectoration no longer putrid.

This improvement continued until the 8th September, when again there was a rise in pulse and temperature, with copious fœtid expectoration. All the unfavourable symptoms passed off in less than twelve hours.

For some days there was improvement in every way, but on the 14th, 15th, and again on the 19th September, fœtid expectoration was noted, but much less in quantity, and (so to speak) in quality of smell, the appetite failing somewhat before each return. The constitutional disturbance was slight, with no marked rise in temperature, respiration, or pulse. There was no recurrence after the 19th September, and early in October this gentleman was able to resume business. I recently had the opportunity of seeing him in perfect health.

Treatment.—The treatment adopted at the first was varied but little. Chlorate of potassium mixture was given with the quinine, &c., pills, and on 13th September Sanitas oil was substituted for carbolic acid. I have no doubt that this preparation of turpentine acted beneficially in the healing of the diseased *locus in quo*, to say nothing of its powerful antiseptic action. "Fellows'" syrup was prescribed when convalescent.

Remarks.—In practice I have met with but three cases of gangrene of the lung. In two the fœtor was constant, and from start to finish there never was any improvement or remission; both these cases were fatal.

In the case above related there were well-marked remissions. Between the attacks the health was almost perfectly restored, for Mr. —— ate well, slept well, was almost free from cough, with scanty expectoration; no fœtor of expectoration or breath; the respiration clear, and no crepitus.

Of this extraordinary form of gangrene, but few cases are met with. The late Dr. Stokes, of Dublin, mentions two well-marked cases. In one instance, occurring in a female of middle age, the disease proved fatal after a continuance of many months. No cavity was found until within a few weeks of death.

The other example was in the case of a young man, who, after a long struggle with the affection, seemed to have recovered perfectly. However, he subsequently died of pneumonia. In both cases there was singular obscurity of physical signs in the early periods of disease.

In my case, I over and over again examined and failed to detect any cavity, dilatation of a bronchus, or evidence of large amount of fluid in the lung. *Primâ facie* after the copious expectoration of fœtid matter, one expects, by the usual means, to detect a cavity, but it appears that copious fœtid expectoration does not necessarily imply the formation of a cavity or the detection of the source of the expectoration.

Stokes argues that in the earlier periods of this disease there is no solution of continuity or much consolidation of the lung, and that this is a disease commencing in points (healthy tissue intervening) with all the difficulties of diagnosis attending the detection of analogous changes—*e. g.*, the first stage of tuberculosis or isolated cancers. But there must be something more, for one of the phenomena of the disease is the copious secrêtion of a fœtid matter, which makes it almost certain that either the portion of the lung which suffers death must be insignificant, or that the surface which secretes the putrid fluid is extensive, and this fluid is originally poured out in a putrid form and the disease is at first one of secretion. The presence of such sputa proves nothing, except that generally a disintegrating process is taking place somewhere in the pulmonary apparatus, and the question is, whether this disintegrating process occurs with the *intact* bronchi or is associated with destruction of the parenchyma of the lung.

We may conclude with Stokes that in any case where sudden fœtid expectoration has occurred, we are not justified in pronouncing the lungs healthy or the patient in a safe position because physical examination, even the most accurate, fails to detect disease sufficient to account for the symptoms.

SIMPLE MEANS OF OBTAINING LOCAL ANÆSTHESIA.

Dr. Cheize reports a case in which, wishing to remove an in-growing toe-nail, and being without a spray-producer, he covered the toe with a pledget the size of a crown piece, poured ether on it, and evaporated this by means of a pair of bellows. In five minutes anæsthesia was complete, and lasted while the nail was being removed, and the matrix seared with the actual cautery.—*Glasgow Med. Journ.*, July, 1883; and *Medical News*, July 28, 1883.

DIARRHŒA IN INFANTS.

Dr. Jules Simon, among other forms of diarrhœa, alludes to the cerebral, and says:—"Diarrhœa may assume a cerebral form, that is, it may be accompanied by certain cerebral phenomena or by eclamptic convulsions, even although the diarrhœa may be but slight. As a result of a profuse drain, a comatose condition may be developed. Again, meningeal symptoms may develop and meningitis be simulated." Many of the reported cases of meningitis with recovery are, the writer thinks, only cases with meningitic symptoms. The various forms of diarrhœa are discussed in detail. For the treatment of cholera infantum, the writer recommends—(1) preventive measures to be adopted during the premonitory catarrhal stage, and (2) after the full development of the affection, alcohol internally and externally, and mustard baths.—*Edinburgh Med. Journ.*, July, 1883; and *Medical News*, July 28, 1883.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P., F.M.S.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, August 11, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa		From all causes	From seven Zymotics
Dublin, -	349,685	764	553	86	131	–	3	2	–	10	13	15	83	20·6	1·6
Belfast, -	214,022	519	369	67	58	–	-	16	3	11	12	17	57	22·4	3·6
Cork, -	80,124	160	99	14	22	–	–	–	1	–	3	2	13	16·1	0·9
Limerick, -	38,562	77	47	5	9	–	–	–	–	1	1	-	9	15·9	0·7
Derry, -	29,162	80	47	9	8	–	–	1	–	–	3	1	7	21·0	2·3
Waterford,	22,457	56	32	7	7	–	–	–	–	–	–	1	1	18·5	0·6
Galway, -	15,471	36	24	2	13	–	–	–	–	–	–	–	2	20·2	-
Newry, -	14,808	22	17	3	4	–	–	–	-	–	-	-	5	14·9	-

Remarks.

The returns in the present instance are almost without exception favourable and indicative of a satisfactory state of the Public Health. The cool, showery weather of July no doubt conduced to the low death-rate from all causes and particularly from the chief zymotic affections. The highest death-rate per 1,000 of the population annually in the selected towns was 22·4 in Belfast; the lowest was 14·9 in Newry. In the sixteen principal Town Districts of Ireland the rate of mortality was 20·1 per 1,000 per annum. In twenty-eight large English towns it was 20·0, including London, in which it was 20·3. In Edinburgh it was 17·9, and in Glasgow much higher—namely, 24·1. Deducting the deaths of persons admitted into public institutions from localities outside the registration district (14 in number), the death-rate in Dublin becomes 20·0, and that within the municipal boundary is 22·9.

Except in Belfast, the mortality from febrile zymotics was moderate or low. In that town the deaths from these affections represented a death-rate of 3·6 per 1,000 per annum, and included 16 from scarlet fever, 11 from whooping-cough, 12 from the continued fevers, and 17

from diarrhœal diseases. In Dublin the deaths from febrile zymotics were only 53, compared with a ten-years' average of 106·6—that is, the mortality was only one-half the average. They included 10 from whooping-cough, 13 from the continued fevers, and 15 from diarrhœal affections. All the victims of whooping-cough were children under 5 years of age, and 4 of them had not reached a year. Of the 13 fatal cases of fever, 7 were referred to typhus and 6 to typhoid. There is nothing more remarkable in the returns than the comparatively low mortality from diarrhœal affections. In the eight selected Irish towns the deaths were only 36. In London, on the contrary, the mortality from this group of diseases was at first high, subsequently becoming moderate. The weekly numbers of deaths were 351, 254, 168, and 94 respectively—in all 867. The population of London is 3,955,814; that of the eight Irish towns is 760,291.

In the Dublin Registration District 764 births and 553 deaths were recorded. The deaths included 86 of children under one year of age and 131 of persons aged 60 years or upwards. The corresponding numbers in the previous four weeks were 105 children under 12 months old, and 159 persons of 60 years or upwards.

Eighty-two deaths were referred to diseases of the respiratory organs in Dublin. This number was slightly in excess of the average—78·8. They included 44 fatal cases of bronchitis (average = 48·1) and 19 of pneumonia (average = 14·3). Pulmonary consumption was credited with 177 deaths in the eight chief Irish towns, compared with 227 and 254 respectively in the two previous periods.

On Saturday, August 11, the number of cases of the principal epidemic diseases under treatment in the chief Dublin hospitals were—smallpox, 0; measles, 4; scarlet fever, 21; typhus, 38; typhoid, 2; and pneumonia, 1.

The mean temperature of the four weeks was 56·8° in Dublin, 55·9° in Belfast, 57·7° in Cork, 58·4° at Greenwich, and 54·9° in Edinburgh. These values are all several degrees—on the average 4°—below the average.

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of July, 1883.

Mean Height of Barometer, - - - -	29·830 inches.
Maximal Height of Barometer (at 9 a.m. of 27th), -	30·306 „
Minimal Height of Barometer (at 7 45 p.m. of 11th),	29·294 „
Mean Dry-bulb Temperature, - - - -	57·6°.
Mean Wet-bulb Temperature, - - - -	54·0°.
Mean Dew-point Temperature, - - - -	50·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·372 inch.

Mean Humidity, - - - - -	78·4 per cent.
Highest Temperature in Shade (on 28th), - -	69·2°.
Lowest Temperature in Shade (on 15th), - -	45·4°.
Lowest Temperature on Grass (Radiation) (on 15th and 27th), - - - - - -	42·8°.
Mean Amount of Cloud, - - - -	73·1 per cent.
Rainfall (on 22 days), - - - -	2·222 inches.
Greatest Daily Rainfall (on 23rd), - - -	·570 inch.
General Directions of Wind, - -	N.W., S., S.S.E.

Remarks.

A changeable, cool, and very showery month, with but little sunshine. At the beginning southerly winds prevailed, but after the 12th it blew most frequently from the north-westward. The mean temperature was nearly 3° below the average of the previous eighteen years. The rainfall (2·222 inches) was less than the average (2·523 inches), but the rainy days (22) were considerably in excess (average = 16·9). In Great Britain the month was remarkable for the frequency and severity of the thunderstorms which occurred.

Until the 12th the barometer was almost constantly lowest off the Western coasts of Ireland and Scotland, and relatively high on the Continent. Southerly and south-westerly winds were consequently experienced in Western Europe. In Ireland they were accompanied with cloudy skies and frequent showers, in England with a succession of thunderstorms and fair hot intervals, and on the Continent with tropical heat—even as far N. as Stockholm the maximal temperatures on the 1st and following days were 86°, 91°, 82°, 81°, 75°, 79°, and 82° respectively. On the 2nd the thermometer rose to 83° in London, 80° at Cambridge, and 79° at Loughborough and Oxford. These high temperatures were succeeded by violent thunderstorms in nearly all parts of England at night.

On the 11th an atmospherical depression, deeper than any observed for some months, passed slowly north-eastwards across Ireland and Scotland, and caused very unsettled weather. Squalls and heavy showers prevailed, accompanied with thunder and lightning in the midland counties and N.E. of Ireland, and at 6 p.m. the barometer was as low as 29·14 inches at Mullaghmore, Co. Sligo. At 8 a.m. next day pressure was below 29·20 inches over the N. of Ireland and the greater part of Scotland. Heavy showers again fell in many places, and temperature gave way as the wind drew into W. & S.W. in the rear of the depression, which reached Norway on the morning of the 13th.

During the remainder of the month several atmospherical depressions were observed over the North Sea and Scandinavia, so that north-westerly winds were prevalent in the British Isles, temperature was

low, and the weather was often cloudy and showery. The mean temperature of Sunday, the 15th, was about 8° below the average in Dublin, and at Nairn, in Scotland, and Churchstoke, in Montgomeryshire, the thermometer in the screen sank to 39°. The weather was temporarily fine on the 18th and 19th, but on the 21st exceptionally heavy showers of rain and hail, with thunder, were reported from many parts of England and Ireland. In Dublin the heaviest downpour of the entire month occurred on the afternoon of the 23rd—more than half an inch (·560) of rain falling in little over an hour. A very marked improvement now showed itself in Ireland as an area of high barometrical pressure came in from the Atlantic. In England the weather remained cold and showery, owing to the presence of a rather deep depression in the Baltic, which caused fresh and squally northerly winds. In Dublin the 26th and two following days were thoroughly summer-like. On the 29th and 30th, however, a new disturbance crossed the south of Ireland and England from W. to E., bringing with it clouds and a renewed rainfall. The 31st was a dull, but otherwise fine day.

In Dublin distant thunder was heard on the 5th, 13th, and 21st, but no severe thunderstorm occurred. Hail fell on the 21st. No solar or lunar halos were observed.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

PARALDEHYDE—A NEW HYPNOTIC.

Every addition to our resources in the direction of safe and efficient hypnotics is especially desirable. We owe to our Italian colleagues this new contribution. It may be desirable to put before our readers some exact information regarding the physical and chemical qualities of this substance, especially as it is likely to enact so important a *rôle* in the therapy of the future. Paraldehyde is a polymeric modification of aldehyde. What is aldehyde? This is, in brief, alcohol deprived of its hydrogen, and although a generic term applied to a group, in this connexion means acetic aldehyde. Paraldehyde being merely the same substance in respect to its atoms, but which are arranged differently, may be suspected to have analogous properties. Above the temperature of 51° F. it is a colourless liquid, having a peculiar odour, and a specific gravity of ·998. It boils at or about 225° F., and it is soluble in 8 parts of water at 52° F. Aldehyde acted on by chlorine is converted into chloral. These chemical facts indicate the position of paraldehyde from the physiological standpoint, and probably suggested its utility as a hypnotic. For medicinal administration, the dose ranges from ʒss. to ʒijss., and it is said the best results are had from the maximal dose.

In the trials made of it, paraldehyde has proved to be an admirable hypnotic, possessing most of the qualities but none of the dangers of chloral. It acts first on the cerebral hemispheres, and causes torpor without the preliminary excitement so common in the action of the sleep-producing class. After the hemisphere, the action extends to the medulla oblongata, and then to the cord. A lethal dose suspends the functions of the medulla and the respiratory centre, and the action of the heart ceases after the respiration. In respect to the effect on the heart, paraldehyde is far safer than chloral; indeed, it appears to be free from the danger which renders the administration of chloral in large doses so doubtful an expedient. Its effect as a hypnotic is not so persistent as that of chloral, but it may be maintained by the repetition of sufficient doses. No ill-effects of any kind—no after-nausea, or depression, or headache—have been observed to follow its very free administration. Paraldehyde may be prescribed as a hypnotic in the various conditions usually requiring such a remedy—in fevers, rheumatism, gout, prurigo, &c. (Morselli). It is, however, in mental and nervous disorders that it will probably be most used. By the Italians, Albertoni, Morselli, and others, it has been prescribed with very marked success in acute mania, in the wakefulness of dementia paralytica, in hysterical paroxysms, and in insomnia arising under ordinary conditions. They have found it especially useful in that form of wakefulness caused by the fear of inability to sleep. Surely if these statements be confirmed, an important remedy has been discovered in paraldehyde.—*Medical News*, July 28, 1883.

BLOOD CHANGES IN ERYSIPELAS.

Dr. Norton Whitney gives an account of the observations made by other authors on this subject, and then states the result of his own. In specimens of blood from cases of erysipelas which he examined, fine granules were seen, both free and in masses, but these were only in a few cases in excess of those seen in the normal blood. The rapid formation of a network of fibrin under the cover-glass was a noticeable feature in nearly all specimens of erysipelatous blood. The bands of fibrin appeared generally to start from granules or granular masses. When tincture of perchloride of iron, in the proportion of one drop of the tincture to an ounce of a solution of common salt, sp. gr. 1·070, was added to specimens of blood of double the bulk, it materially affected the behaviour of the red blood corpuscles. In the case of healthy blood these became somewhat hardened and contracted, rebounding as if hard and elastic when impinging upon one another, and failing to form into rouleaux. In blood from a patient suffering from erysipelas, these corpuscles seemed to lose the sticky appearance which they present in this disease. This effect of the ferric chloride was more marked with the weaker than with the stronger solutions, and possibly may have been due

to the astringent properties of the tincture. It seems probable that the red corpuscles of the blood have their function as oxygen carriers modified by the poison of erysipelas, whatever that may be. In support of this may be mentioned the appearance of the corpuscles themselves under the microscope when first withdrawn from the circulation—their elasticity being apparently in a great measure lost, and their softness being so great as to permit of their being drawn out into a spindle-shaped form or into filaments by the application of the slightest force. Sometimes they appear to have almost lost their definition, and look like streams of yellow fluid crossing the field of the microscope. They become rapidly decolorised and crenated, and give up with apparent readiness some of their component parts so as to form blood crystals with great ease. The vitality of the blood itself appears to be lowered as indicated by the rapid formation of active bacteria in it after its withdrawal from the body. The known value of iron in the treatment of erysipelas, together with its acknowledged action either upon the corpuscles themselves or upon their production, may also be looked upon as affording additional proof, whilst the appearance of erysipelas of the face on the right side in thirteen out of fifteen cases of that form of the disease observed (a fact most probably to be accounted for by the differing blood-supply of the two sides), and a tendency to periodic occurrence noticed in these and other cases, go to support the position by pointing to the blood in general as affected. The part which micrococci or other foreign organisms play in these changes has as yet perhaps to be determined. Zweifel, however, has recently advanced the hypothesis, based upon various experiments, that, as normal blood by being deprived of its oxygen without being exposed to the influence of atmospheric germs can become poisonous, and acquires septic properties (certain specimens of non-deoxygenated blood containing micrococci having been proved harmless), therefore no pathogenetic property is inherent in the organisms found in these experiments, unless these micrococci can form a poison in the blood as soon as there is no more oxygen to be consumed. Assuming this to be true, it will be seen that any interference with the functions of the oxygen-carriers of the blood would at once bring about the necessary condition for further pathological changes through the medium of these organisms. The production of acid by bacteria would tend to destroy the hæmoglobin, and the softening of the red corpuscles would increase their tendency to wander out. The micrococci can only be hurtful when the blood has lost some of its normal vital resistance, and if we assume that the alterations of the red blood corpuscles are a principal factor in the alteration of the blood, we shall expect to find such remedies as iron useful, and this is shown by experience to be the case.—*Philadelphia Medical Times*, March 10, 1883, and *Practitioner*, August, 1883.

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THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

OCTOBER 1, 1883.

PART I.

ORIGINAL COMMUNICATIONS.

ART. IX.—*Diabetic Coma, with some Remarks on the Pathology and Treatment of Diabetes.* By JAMES ALEXANDER LINDSAY, M.A., M.D., M.Ch.; Assistant Physician to the Belfast Royal Hospital.

I HAVE recently had the opportunity of observing three cases of diabetes terminating by coma, and I think them worth putting on record, as the facts may tend in some slight degree to enlarge our knowledge of an interesting and important condition which has lately attracted great attention:—

CASE I.—On Monday, May 21st, I was asked to look at a patient (Samuel W.) in the extern department of this hospital. He complained merely of weakness and languor, and was manifestly much emaciated. A few rapid questions elicited no information of importance, and a careful examination of the thorax was equally barren of result. Acting on an excellent clinical rule, which I owe to Dr. Stephen Mackenzie—viz., "In cases of marked emaciation without obvious cause think of phthisis and diabetes"—I proceeded to examine the urine for sugar, and was not surprised to find it loaded. The patient was admitted to hospital, and put upon an effervescing alkaline mixture, the tendency to languor and drowsiness discouraging treatment by codeia.

The history elicited was as follows:—The patient was thirty-three years of age, and had served for ten or twelve years as a soldier in Gibraltar, Malta, and China. For the last three years he had been a worker in an iron foundry. He had been a free liver, and frequently drank to excess. Three months previous to admission he began to lose

flesh, but it was not until some time subsequently that he noticed any polyuria. During this time his appetite was excessive, and he began to suffer much from thirst.

The chief features in the case were marked emaciation, dry skin, great weakness, and considerable mental torpidity. There were no signs of disease in the lungs. The breath had an ethereal odour.

The patient survived just one week after admission. During this time his general condition underwent no change of importance. The quantity of urine passed varied from 120 to 160 oz. daily.

On Sunday, May 27th, he became worse, and was confined to bed. He seemed heavy and stupid, refused food, but drank eagerly. His friends were warned that his state was extremely grave. Next morning I did not see him until 11 o'clock, when I found that well-marked coma had gradually supervened. He lay back in bed with the eyes half-open, and occasionally swung his arms listlessly about. The breathing was peculiar. The inspiration was normal in character, but the expiration was greatly prolonged, and consisted of a series of jerky panting gasps. The pause was much longer than normal. Respirations 12 per minute. The breath was quite cold and still retained the ethereal odour. The pupils were normal and responded to light. The pulse was very fast and almost imperceptible. The skin felt very cold, and the thermometer in the axilla registered only 96·5°. Some urine was drawn off by a catheter and examined; it was light in colour, had a specific gravity of 1034, contained a large quantity of sugar and a trace of albumen. Ferric chloride gave first a curdy white, and then (on shaking up) a dirty claret-coloured precipitate. Some blood was obtained; it appeared quite normal both to the naked eye and under the microscope. About 4 o'clock the patient revived slightly, opened his eyes, looked round, and swallowed some milk. Temperature still 96·5°. At 7 o'clock he was profoundly collapsed. The respirations were still about 12 per minute, but expiration was now short, and the pause proportionately prolonged. Temperature as before. The patient died at 7 40 p.m.

Case II.—Samuel A., aged twenty-two, was admitted to hospital on February 24th. Patient was a lamplighter. A few days before Christmas he slipped and fell, coming in contact with a stone, which struck him on the right groin. Five days subsequently a swelling appeared in each lumbar region—that on the right side being the larger and more painful. He drank cream of tartar freely, and the swellings disappeared, the pain also subsiding. Soon after, however, he began to suffer much from thirst, and noticed that he was passing large quantities of urine. At the end of a fortnight his thirst disappeared, but he began to lose flesh rapidly, and his strength began to fail. Patient was much emaciated, and stated that he had lost 30 lbs. during the previous two

months. He complained chiefly of weakness and frequency of micturition. He felt some pain in the back as he lay in bed, and there was some tenderness on pressure in both groins. His expression was dull and heavy. The urine was of a pale straw-colour, very acid; sp. gr. 1033; much sugar was present, but no albumen; quantity, 6 pints. Codeia, 1 grain three times daily, was ordered.

On the 27th February the patient was manifestly worse, being much prostrated. The codeia was stopped, and stimulants ordered. About 1 o'clock, p.m., the patient gradually sank into a state of coma, from which he never rallied until the time of death, which occurred at the end of ten hours. During the coma the pulse continued fair, the breathing was stridulous, the face pale, the skin cold, and the pupils much contracted (probably from the effect of the codeia).

Case III.—Alfred C., aged twenty-three, was admitted to hospital on March 15th; but, as he left it again almost immediately, there was unfortunately no record taken of his case. As far as I can recollect, the following is a brief outline of the history:—The patient was a distinguished student, and attributed the onset of his attack (which occurred a few weeks previous to his admission to hospital) to severe study in preparation for one of the higher university examinations. The quantity of urine was large, and the specific gravity high, but I have no exact record.

A week or ten days after leaving hospital the patient fell into a state of coma, and died in a few hours. Before admission to hospital, and after his departure therefrom, he was treated on the skimmed-milk principle without drugs; and, according to his own statement, he found this treatment effectual for the relief of thirst, though it exercised no influence on the progress of the disease.

The above cases illustrate several important points with reference to diabetic coma, which may now be regarded as fairly established:—

1. As regards its *frequency*.—It so happens that during the present year *all* the fatal cases of diabetes at the Royal Hospital, Belfast, have terminated in coma. This is, no doubt, an accidental circumstance, but, nevertheless, the fact is striking and significant. At the London Hospital, in the series of 37 fatal cases recorded by Dr. Stephen Mackenzie, 19 terminated in coma; and Dr. Frederick Taylor has recorded 53 fatal cases at Guy's Hospital, of whom 33 died comatose. We shall probably be within the mark if we conclude that at least *one half* of all the fatal cases of diabetes end in coma. In view of this fact it is

remarkable that this termination of the disease was almost entirely overlooked by the earlier writers, and it becomes a question alike of clinical interest and practical importance whether death by coma in diabetes has become more frequent since the treatment by codeia has been popularised. To this important topic I shall presently recur.

2. As regards the class of cases in which death by coma is to be specially apprehended, it is relatively much more frequent in the young. The ages in my three cases were, respectively, thirty-three, twenty-two, and twenty-three—average age, twenty-six. Considering the frequency of diabetes in the middle-aged and the old, and the great chronicity which often marks its course, this preponderance in the case of the young is sufficiently striking.

3. Coma is a much more frequent termination in acute than in chronic cases. The average duration of the disease in the above three cases was under three months, while the average duration of ordinary cases of diabetes terminating in various ways is probably rather more than a year.

4. Coma is said to be more frequent in those cases which present no trace of pulmonary disease—a fact to which Dr. Stephen Mackenzie has drawn special attention. There was no evidence of any lung affection in any of the cases I have recorded, though careful examinations were made with the view of detecting some pulmonary lesion.

The chief features which distinguish diabetic coma are the peculiar form of dyspnœa which has been aptly compared to that seen in a healthy person after violent exercise—coldness and lividity of the skin, usually combined with great rapidity of the pulse. Most authorities agree that the ethereal odour is usually absent from the breath; but it was well marked in one of my cases.

When we come to inquire into the pathology of diabetic coma, we are confronted with a number of conflicting theories, each supported by a mass of more or less plausible *post mortem* evidence. The whole question, indeed, of diabetes has been a sort of *corpus vile* for the exercise of much ingenuity and acumen on the part of pathologists, with the result that we are still far from the attainment of certain knowledge. Let me briefly summarise the various views which have been held regarding the causation of diabetic coma.

It has been attributed to—

(1.) Some form of toxæmia, either

  a. Uræmia,

  β. Acetonæmia, or

  γ. The presence of some other toxic agent in the blood, possibly aceto-acetic acid.

(2.) The presence of fat embola in the minute pulmonary vessels.

(3.) Dehydration of the blood.

(4.) Some lesion of the sympathetic system.

It would be easy to multiply such theories, but I shall rest content with enumerating the above.

The uræmic hypothesis may be dismissed without further consideration, the clinical and pathological evidence being strong against it.

The theory that diabetic coma might depend upon fatty embolisms has been a favourite one since the discovery that in some cases of coma the blood has a milky appearance, and contains some molecular matter bearing a great superficial resemblance to fat. But the theory fails, unfortunately, from two points of view. In the first place, it has been shown that this milky appearance of the blood is rather an exceptional condition—the blood being frequently normal in its naked-eye characters, and sometimes thick and dark-coloured. In the second place, fatty embolisms have been proved to exist in many conditions unattended by coma, or indeed any symptoms at all. Thus they are constantly present in cases of fracture of bones, and even in cases of mere contusions of the soft parts; and, so far from causing coma and death, they are apparently productive of no morbid process whatever.

The theory advanced by Dr. Hilton Fagge—that dehydration of the blood is the cause of diabetic coma—deserves to be treated with some respect, as such a condition of the blood is both *à priori* probable in diabetes, and has been proved to exist in many cases, its appearance being sometimes described as thick and black, or "tarry." It is not so clear how such a condition of the blood could produce the symptoms of coma, but we can conceive several ways in which this might be effected. Against Dr. Fagge's view is the admitted fact that the blood in diabetic coma presents no constant features, the "tarry" condition being as exceptional as the milky appearance on which so much stress has been laid by other authorities.

The view that the sympathetic system is at fault rests rather on theory than on evidence, and we are thus thrown back upon, on

the whole, the most probable view—viz., that the coma is due to the presence of some toxic agent in the blood, whether acetone, aceto-acetic acid, or some other product of alcoholic fermentation which has hitherto eluded observation. The evidence is still inconclusive, but this is the line which observers are now mainly following with the best hopes of a successful issue.

As regards the prognosis in diabetic coma, I am not aware of any case of recovery being on record. Death seems to supervene in less than 24 hours, and often after a very much shorter period.

Probably few attempts at treatment have been made, the manifestly moribund condition of patients after the onset of coma discouraging any active interference. Intra-venous saline injections were tried by Hilton Fagge in one case with some slight temporary advantage. The marked fall in surface temperature which has been frequently noted would indicate the propriety of trying the effect of warmth to the skin, warm water enemata, &c.; and the fast weak pulse might lead us to try alcohol, ammonia, or digitalis. So far as I have observed the patients retain the power of swallowing, which renders treatment rather less hopeless than it would otherwise be.

Leaving the question of diabetic coma, I shall now make a few remarks on the pathology and treatment of diabetes in general, not in the hope of advancing anything new, but rather of defining the exact point at which we have now arrived. A recent discussion at the Pathological Society, though highly interesting, served mainly to show how far we still are from any exact knowledge of the *vera causa* of diabetes. Cases were brought forward exhibiting a vast variety of morbid lesions affecting almost every organ, but none of these were shown to be constant or diagnostic. The discussion was mainly useful in so far as it served to clear the ground for future inquiry. The kidney and the liver having been interrogated with negative results, the attention of pathologists is now mainly directed to the brain and to the blood. Dr. Dickenson sees in certain vacuolations of the nerve centres which he has described an adequate explanation of the phenomena of the disease, while Dr. Pavy is not less convinced that the true cause is some chemical defect in the blood. The *post-mortem* evidence being so extremely conflicting, one would be disposed to attach great relative importance to any points in the history of cases of diabetes which might seem likely to throw light on the ætiology of the disease. In one of the cases which I have recorded there is a very clear history of

the onset of the disease occurring immediately after an accident. It is always our duty to sift such histories with exceeding care, and to be continually on our guard against the "*post hoc, propter hoc*" fallacy. In the above case, however, the history is so clear that it is difficult to doubt that the accident in question determined the onset of the disease, and I can support this view by another precisely similar case, where also an attack of diabetes followed immediately upon a slip on the ice. I have records of two cases where diabetes followed alcoholic excess, and in another case it was alleged to have supervened on recovery from a "feverish cold." I mention these facts mainly for the purpose of accumulating information on the question, and without venturing to determine what value (if any) is to be attached to them.

On the subject of the treatment of diabetes I should wish to speak with all reserve. There are few diseases where such conflicting results are alleged to have followed the administration of certain drugs in the hands of different observers, some regarding codeia almost as a specific, while others find that in the great majority of cases it is not only impotent to check the disease, but that its administration serves to aggravate the patient's symptoms and materially augment his sufferings. My own experience of the drug is disappointing. In only one instance have I seen apparent cure follow its administration, and this was a mild case, which might possibly have yielded to the restricted dietary which was also enforced. In several instances I have seen codeia productive of nothing but mischief, the disease continuing unchecked, while the most obstinate constipation and very distressing headache attended its use. I have already alluded to the very important question whether death by coma has become more frequent since the treatment of diabetes by codeia was introduced—the evidence seems to be, so far, against such an assumption. In two of my three cases of coma, codeia was not administered at all, and in the third case it was continued for only two or three days. On the other hand, numerous cases are on record where codeia was given in large doses for long periods without the advent of coma. Strangely enough, codeia seems to tend as often towards insomnia as narcotism.

The treatment by large quantities of skimmed milk, without medicine, has now been extensively tried, and with varying results. It soon becomes grateful to the patient, relieving his thirst and increasing his comfort. I have seen one case of average severity where this treatment was signally successful, the patient improving

steadily, with a speedy recovery of flesh, and being finally discharged cured. In some cases I have seen much relief and some slight benefit follow the free administration of effervescing alkaline mixtures.

Finally, I have seen the alleged specific, "Bethesda Water," tried in a single case without any benefit whatever.

From the above facts no conclusions of importance regarding the treatment of diabetes can be safely drawn. Codeia has been so highly praised and seems to succeed so admirably in suitable cases, that it will probably retain for some time its present position as the favourite therapeutic agent. The skimmed milk treatment is praised by some and denounced by others. Probably some of the milder cases of diabetes will yield to dietetic treatment alone, others benefit by codeia, and others again by skimmed milk. It seems impossible at present to determine beforehand the therapy most likely to succeed in any given case. The more severe and acute cases of diabetes do not seem to be amenable to any of the present methods of treatment.

ART. X.—*Case of Hemiplegic Epilepsy following Fracture of the Skull.* By CHARLES B. BALL, M.D., F.R.C.S.I.; Surgeon to Sir P. Dun's Hospital, &c.

FOR the notes of this case of hemiplegic epilepsy following fracture of the skull, I am indebted to my dresser, Mr. W. Kiddle:—

CASE.—M. Y., aged thirty-six, a well-built, powerful man, who had been a policeman, but was dismissed the force for intemperance, and was now by occupation a car-driver, was admitted into Sir P. Dun's Hospital on Friday, April 27, 1883. I had seen him that morning at his lodging, where I elicited the following statement of his case:—On the previous Monday (23rd inst.) he was driving a car at Donnybrook, when the horse stumbled and he fell off on his head. He was stunned for a few minutes, but then got up and drove his fare back to Jury's Hotel, where, after imbibing some of the national restorative, he said he felt quite well. On Tuesday, Wednesday, and Thursday, he was about at his work as usual, but on Friday morning he was found insensible in his bed by some neighbours who went to see why he had not come to his work. He lived in a room by himself. Shortly after he was found it was stated he had a fit.

Upon admission his head was shaved, and during the process he had a convulsion which affected the left side of the face and arm only. A

detailed examination of his head showed an abrasion of the skin close to the left parietal eminence. This did not even expose the aponeurosis of the occipito-frontalis muscle, and no irregularity of surface of the bone could be felt in the immediate neighbourhood. The only other condition to be detected on the outside of the skull, which could in any way be considered abnormal, was an irregularity and ridge in the neighbourhood of the lambdoidal suture on the left side, but over this there was not the slightest superficial sign of injury. The left arm and leg were decidedly weaker than the right, although he was able to move them to some extent. There was slight convergent strabismus. He was in a condition in which it was impossible to get any information on subjective phenomena. When roused he would answer questions much as a drunken man, in language not of the choicest. During the first twenty-four hours he was in hospital he had four epileptiform convulsions affecting the left side of the face and the left arm. Early on the morning of Sunday, 29th, the fits became very much more frequent, and when I visited the hospital about 10 30, a.m., I saw several of the attacks, and they invariably commenced in the same way. The eyes first wandered off to the right side and became fixed for a few seconds, then nystagmus, with turning of the eyes to the left side, and convulsions of the facial muscles came on, and about the same time the upper extremity became affected. The spasms did not appear in the lower extremities for several seconds after they were well established in the arm and face. The average duration of each fit was about three-quarters of a minute, the longest noted being 1½ minutes. There was no period of coma after the convulsions. He would talk as rationally immediately after the fit as he did before, and sometimes told us he had just been for a drive. There was complete paralysis of the left upper and lower extremities, with partial facial palsy. On the same side reflex action was well marked. When his left hand was lifted and placed in his right he said that it belonged to the man in the next bed. During the 30th and 1st the convulsions were very frequent, occurring every few minutes, but during the 2nd they decreased very much in frequency, and he died comatose on the morning of May 3.

The question of operative interference was frequently discussed during his illness, but we determined that no operation was justifiable, as all the indications of brain lesion were on the side opposite the superficial injury, and the result of the *post mortem*, as will be shortly detailed, showed how futile any attempt at trephining would have been. Treatment was mainly directed to trying to moderate the force and frequency of the convulsions by large doses of chloral and bromide of potassium.

At the *post mortem* I had the advantage of the help of my colleague, Dr. T. E. Little. On raising the scalp we found a sub-aponeurotic extravasation of blood over the whole surface of the cranium. Of

anything this was rather less marked under the scalp wound than at other parts. Corresponding with the ridge felt during life was a fissure which traversed the left lambdoidal suture, and round this the extravasation was sub-pericranial. On raising the calvaria we found blood effused between the bone and dura mater over a considerable extent, which was distributed evenly on both sides of the middle line, and extending over the upper portions of the occipital and the inferior posterior portions of the parietal regions. There was a large collection of blood in the cavity of the arachnoid on the right side covering the whole of the right cerebral hemisphere, and upon removal of the brain we found three distinct areas of brain lesion on the right side—viz., the inferior frontal convolution, the temporal convolutions, more particularly the middle, and the inferior occipital convolution. In these situations the cortical substance was much lacerated and soaked with extravasated blood, and the pia mater and visceral arachnoid were torn through. In addition to these injuries there were several small hæmorrhages underneath the visceral arachnoid on the same side. There was no lesion to be found on the left side or in the interior of the brain. Returning now to the skull and tracing the fracture, we found three lines radiating from a point about two inches to the right of the middle line in the lambdoidal suture, and from this focus one line passed round by the suture to the left side and then up into the parietal bone, but not as far as the eminence; a second passed through the right parietal bone to the groove for the middle meningeal artery, but its termination was lost in the saw cut for removal of the brain; a third and shorter one passed down the occipital bone in the posterior fossa of the skull. The external aspect of the fracture gaped more than the internal, and at one point the outer table was slightly splintered.

This case presents for consideration many points of pathological and clinical interest; and first we may consider the mechanical conditions under which the injuries were produced, and in doing so we must bear in mind the following three signs of injury—viz., 1. External evidence of injury applied to the *left* parietal eminence. 2. Extensive lacerations of the cortical gray matter of the undersurface of the *right* cerebrum, the largest area of disintegration being diametrically opposite the left parietal eminence. 3. A fracture, the focus of which was at an angle of 90° with a line joining the point of external injury and the area of greater brain lesion.

That the brain should be lacerated by *contre-coup* in injuries of the head is a fact that has been very frequently observed—indeed, according to Bergmann, it is the rule to find in cases where a blow is disseminated over a large area of the head, as when a person

falls on hard ground, that the greatest brain lesion is observed at a point opposite the part struck, and it is only in those cases where the blow is limited in area that injury of the brain corresponds with the part struck. As the vast majority of injuries are inflicted on the upper half of the cranium, so we find the under-surface most frequently lacerated. This fact was observed by Brodie, who attempted to explain it by the harder, more resisting, and uneven surface of the base of the cranium. M. Duret attempts to account for these injuries by waves which pass in every direction from the point struck, and which, meeting at the opposite side of the head, cause the disruption of the brain.

This theory is open to some objections. In the first place, the space occupied by the cerebro-spinal fluid is too small and too obstructed by the points at which the convolutions touch the arachnoid for any very powerful wave to pass; and, even if we granted that such waves could pass freely, it could not account for the fact that a *greater* amount of injury is inflicted at the opposite side than at the side struck. M. Gama made a number of experiments with glass globes filled with gelatine, and he found, when the vessel was struck a severe and diffused blow, the gelatinous mass separated from the glass to a greater extent at the opposite side, and this fact, although he does not appear to have followed it up, gives, I think, the key to the explanation of injury of the brain by *contre-coup.* When a person falls heavily on the top of the head the brain is compressed towards the part struck, and separates itself from the base of the skull—a vacuum is therefore left. The internal vascular pressure in the brain is consequently unopposed, and at the same time is increased by the pressure to which the mass of the brain is subjected, and as a result the smaller vessels give way, breaking down the soft gray matter and tearing through the arachnoid, exactly in the same way that we see ecchymosis forming under a cupping glass. A point which was observed in the case above related favours this theory—namely, that the disruption of the gray matter extended down into the sulci between the convolutions, which manifestly excludes any question of pressure against the bone. It is, of course, impossible to test this theory satisfactorily by experiments on the dead body, as the important element of vascular pressure is absent.

My colleague, Dr. Purser, kindly drew my attention to a paper by V. Wahl, on fracture of the base of the skull, in which he explains certain fractures, in which there is breaking of the skull

outwards at an angle of 90° from the part struck. When a semi-elastic sphere is compressed at the poles there is a tendency to a break outwards at the equator, and when a person falls on the head a similar compression takes place between the weight of the body, or even the weight of the head, and the part which is struck. We can easily perform a simple experiment which will more clearly explain this matter. If an orange is thrown forcibly against a white-washed wall we find that the part which strikes the wall can be identified by the white mark, and if it has been thrown with sufficient force to rupture the orange, it will be found that the centre of the rupture does not correspond with the white mark, but is at an angle of 90° with it. The line of rupture is, however, in the direction of the white mark. Now this appears to have been exactly what happened in the above case—the point of impact was the left parietal eminence, the focus of fracture in the right lambdoidal suture, and a fissure extended in the direction of, but not as far as, the left parietal eminence. Against this theory it may be urged that the fracture was starred, but when we consider the irregularities present in the suture we can readily imagine how a line of fracture might divide into two; and the gaping of the external aspect of the fracture, together with the slight comminution of the external table, affords evidence, I think, that the fracture occurred from within outwards.

The most interesting clinical features of this case were the epileptiform convulsions, which corresponded closely with the condition so ably described by Hughlings Jackson as indicating lesion of the cortical gray matter, and now well known by the name of Jacksonian epilepsy. The three important points of this affection were very well marked:—(1) The spasm beginning in one group of muscles and gradually spreading in regular order to the other muscles of the same side—in this case the protospasm was invariably in the eyes; (2) Paralysis of the affected muscles; (3) The slight degree of insensibility.

For the production of this form of epilepsy mere destruction of the cortical substance is not sufficient; secondary changes in the neighbourhood of the injured part appear to be necessary—hence the interval which elapsed between the injury and the onset of the convulsions.

The experiments of Hitzig show that removal of a portion of the cortical surface of the cerebral hemisphere in animals was followed by epilepsy after periods varying from one day to five weeks;

and for the production of these convulsions inflammation does not appear to be essential, and certainly was not present in this case. The changes necessary to repair of the injury would seem in some instances to be sufficient.

ART. XI.—*Maister John Arderne. Some Account of an Old MS. presented to the Royal College of Surgeons in Ireland by Sir John Lentaigne, C.B.* By SURGEON-MAJOR ALBERT A. GORE, M.D.; Fellow of the Royal College of Surgeons, and Member of the King and Queen's College of Physicians, in Ireland; in Medical Charge of the Female Hospital, Staff and Departments, Dublin.

THIS most interesting manuscript was written just 534 years ago, only 77 years after a College of Surgeons had been first established in France by Louis IX., and dedicated by him to the honour of St. Cosmas and St. Damian, one of the conditions annexed to its foundation being an obligation to attend divine service every first Monday in the month, and after its performance to dress gratuitously the wounded poor. The members of this faculty were called Master Chirurgeons—a name to be found in army lists of the last century. The clergy had been forbidden by edicts of the Roman Council in 1139, 1163, 1177, and 1216, under very severe penalties, to quit their cloisters or to exercise the profession to the neglect of their sacred duties—hence they were obliged to send their "servitores et ministri" or dressers to undertake the practice of bleeding and other minor surgical operations. In the thirteenth century the Italian Universities had admitted lay students to equal privileges with the clerical, the latter of whom confined themselves to the practice of medicine, whilst the former undertook the capital operations of surgery. As the "servitores" of the clergy still continued to practice after the incorporation of the Paris College in 1268, John Petard, first surgeon to King Louis IX., obtained from his successor, Philip the Fair, an *ordonnance* to assemble all practitioners to undergo an examination as to their qualifications, in order that licenses might be only granted to those fully competent—an edict confirmed in 1352 by King John of France. In 1314 Morodini, Professor of Anatomy in the University of Bologna, had published his anatomical description of the human body dissected from nature; but according to Guy de Chauliac, who practised at Avignon about the date of Maister

Arderne's treatise, the great majority of the so-called chirurgeons might be divided into five classes—the first applying cataplasms indiscriminately to every description of wound and ulcer; the second employing wine only; the third emollient plasters and ointments; the fourth (chiefly military surgeons) promiscuously oils, wool, potions, charms, &c.; the fifth having recourse on all occasions to the saints! Such was then the condition of affairs on the Continent.

In England there was no surgical writer of any note before Maister Arderne. The first Colleges at Oxford had not been founded until the close of the thirteenth century. From the first speculative philosophy taught in them arose the two new practical studies of law and medicine, and on the foundation of New College, in 1346, by Wykeham, permission was given in the statutes to two Fellows to follow the "new study of medicine." Edinburgh had, in 1305, followed the example of France in forming her surgeons into a corporation, requiring them "to be able to read and write, to know anatomie, nature, and the complexion of the human bodie; and likewise to know all vagaries of the surgeon, that he made *fleu-bothomie* in due time." Still, however, as a rule, our princes brought over their medical attendants from abroad, the first medical lectures delivered at Oxford having been by a foreigner, Andrew Alayard, who had graduated at Montpellier, and had been appointed by the Chancellor to lecture on medicine from tables of his own. Nicholas de Farnham, Royal Physician to Henry III. and his Court, had been Rector of Arts in Paris. Before Henry went into France to attempt the re-conquest of Normandy, A.D. 1230, the Chief Justice wrote to the Bishop of Chichester, recommending "one Maister Thomas, an army surgeon, who knew how to cure wounds, a science particularly useful in the siege of castles;" who, no doubt, in turn would try the efficacy of oils, wool, potions, and charms. Whether Henry III. availed himself of his services we are not told, but we know that in the next reign of Edward I. Philip Beauvais accompanied the king as his chief surgeon into Scotland with the army which invaded that country in 1300, his pay being equivalent to £841 13s. 4d. of our present money. It may not be uninteresting to note, in passing, that in this reign the pay of a knight was 12d.; an esquire and constable of cavalry the same; a constable of foot, 6d.; a captain of twenty, 4d.; a crossbow-man, 4d. and 2d.; an archer, 2d.; an agricultural labourer, who was on a par with the lowest grade of foot soldier,

1½d. and 2d. A horse or cow could be then bought for four shillings, and a sheep for tenpence. The sergeant-surgeon, sometimes called knight-surgeon to the king, ranked as an esquire; his nominal pay, 40 marks per annum, with several perquisites attached to the office, such as drawing a certain amount of wine from the king's cellars, and during war the privilege of taking prisoners, and of retaining the amount of ransom paid by them, and twelve pence daily for subsistence, one of his duties being to attend the king when he ventured to battle, or upon active warfare, being in effect the principal medical officer of his army. But until 15 Edward II., A.D. 1322, only a few years before the date of this manuscript, medical officers to attend upon the army are not mentioned in the "wardrobe accounts," when they accompanied the largest force which had hitherto marched out of England, but only to share in the ignominious defeat of Bannockburn. Armies were only now being raised for limited periods by contract with some great lord for a scutage or money payment, the feudal arrangement with its limited tenure of service having become inconvenient, and as each expedition terminated, the individuals who had formed it relapsed into civil life or their ordinary occupations, and the chirurgeon into his town or country practice. Such appears to have been the fortune of Maister Arderne or de Arderne, as he is sometimes called, who had accompanied Edward III. as sergeant-surgeon with the splendid army which disembarked at La Hogue, 12th July, 1346, and who was described by his contemporaries as one "who wrote with simplicity and honesty, and as the reviver of surgery in that country." He is also stated to have been peculiarly successful in the treatment of some surgical affections, to have improved the use and construction of the trepan, adding the central pin, and limiting the operation to the severe forms of injury of the head. Some of his other manuscripts may be found in the British Museum. The one before us is dated 1349, two years after the termination of a campaign memorable in English history, and equally memorable by the introduction into England of the "Black Death," which destroyed a third of the inhabitants of all the countries which it visited. The manuscript is entitled—"The Workes of Maister John Arderne, Chirurgeon, of Newarke, in Nottinghamshire, written by his own hand, in the year of our Lord 1349. With some Observations collected in blank paper by Walter Hammond, Chirurgeon, 1645." The capital letters are in red, as well as the

dates on the later blank leaves which intervene between the older sheets of vellum; while the black letters of the Latin text are almost as distinct and fresh as when written, more than five centuries since, the later writing is much faded.

It will be remembered that Edward III. had embarked at Southampton on board a fleet of nearly 1,000 sail of all dimensions, carrying with him the Prince of Wales (then only sixteen years old) and all the chief nobility of England. This splendid army was composed of 4,000 men-at-arms, 10,000 archers, 12,000 Welsh infantry, and 6,000 Irish, every man-at-arms in the kingdom *in good health* having been summoned to attend personally or send a substitute; but as it was brought under the notice of Parliament, after the siege of Calais, that several inexperienced boys had been armed and arrayed instead of "gallant and competent persons" (*vaillantezet et sufficientz gentz*), this order must have been only partially attended to. Many of the Welsh corps (who were only clothed in scanty dresses of linen cloth, appearing, according to Barbour, naked in the eyes of "even the Scottish peasantry") had an officer styled "medicus," but none of them are charged to the English levies, and in the Welsh they had no proportion to the numbers—a corps of 1,907 men having only one, and another of 968 having two. In their vocabulary only three wounds are described as dangerous—viz., "a blow on the head which penetrated the brain, a thrust in the body which penetrated the bowels, and the breaking of one of the limbs." For attending to every one of these dangerous wounds the chief surgeon was entitled to a fee of fifteen shillings, a tent for the wound costing two. The pay of the army which accompanied Edward having been according to social position, but in addition to plunder and ransom—viz., the Prince of Wales, £1; Bishop of Durham, 6s. 8d.; earls, 6s. 8d.; barons and baronets, 4s.; knights, 2s.; esquires, constables, captains, and leaders, 1s.; vintners and archers on horseback, 6d.; paunceners and foot soldiers, 3d.; masons, carpenters, smiths, tent-makers, armourers, gunners, and artillery-men, 12d., 10d., 6d., and 3d.; Welsh foot, 4d.; the rest, 2d. But in the "Roll of persons" at the after-siege of Calais in 1346, at which Maister Arderne was present with the king, only one surgeon is reserved in the retinue of the Prince of Wales, as will be noticed in the following list—viz., "Edwardus Wallac Princeps-Princeps, 1; Bunneretli, 11; milites, 102; armigeri, 264; sagettarii equites, 384; sagettarii pedites, 69; *chirurgii*, 1; capellarii, 1;

vexellarii, 5; venarii, 25; pedites, 480; clamatores, 1—total, 1,370." In the campaign the Irish auxiliaries had been led by the Earls of Desmond and Kildare, and it is said that their skill at arms and agility and strength were greatly admired by the king. The infantry were divided into two classes—archers and billmen, wearing various portions of armour over short leathern or linen doublets stuffed with cotton or wool, and often a long loose garment called a junk, resembling a small frock. Such ill-provided individuals were returned as naked foot. The light-armed bodies of Irish horse which accompanied the army were called "hobellers," from the name of the small horse they rode. An old chronicler has told us that one hundred men-at-arms were equal to, at least, a thousand of these light-armed troops. The former usually rode to the scene of conflict, and then, dismounting, fought on foot. With horse and equipment each weighed 361 lbs., and when so harnessed had small power of action when wounded, and became an easy prey to the "rascalles" with long knives, who rushed in among them at Crecy, and quickly despatched them; and where on the 15th August, 1346, our old surgeon saw 11 princes, 80 baronets, 1,200 knights, 1,400 gentlemen, 4,000 men-at-arms, besides 30,000 of inferior sort of the enemy lying dead on the field.

The leaves intervening between pages 142 and 143, of the 440 pages of which our old manuscript is composed, gives us some insight into the immediate history of this volume, and of the fees obtained by Maister Arderne. Mr. Walter Hammond tells us "how beginneth ye cure of ye fistula in ano"—one of the improvements in surgery which the author appears to have introduced. He goes on to say—"The time when Mr. John Arderne begun his practice was in ye year of ye Lord, 1349 (two years after he had returned from France). His dwelling was at Craxton, near Newarke, in Nottinghamshire. A relation of ye patients he cured—First, Sir Adam de Endringham, who was in Gasconio, in France, with ye Lord Henry, Earle of Darby, who was afterwards created Duke of Lancaster. The second was Hugh Darling, of Howick, nigh Snaim. Then he cured Thomas Iron, who got 15 orifices, that is, eight on ye one buttock and 7 on ye other, a hand's breadth distant from ye fundament, whereout both wind and ye fæcal matter issued. Afterwards he cured 9 preaching friers, whereof some had 2, some four or five, orifices, a thumb's breadth, some more, from the fundament; some of them ye fistula penetrated forward to ye scrotum. All these, and many others,

he takes God to witness he cured. He ascribeth to himself to be the first that found out this way of ye cure He affirmeth that in his time he never heard of any, neither in England nor in foreign parts, that could cure ye fistula in ano, except one friar minor, that went with the Prince of Wales into Acquitain, who was a great boaster and deceived many in London. This man, because he was ignorant of ye cure of this kind, would persuade ye patients that it was incurable, and would confirm it with an oath that upon ye *dividing up of ye fistula* ye patient would presently die. The like in my time I have heard affirmed by some physicians, who, when the fistulated patients that be willing to undergo ye cure, have discouraged the patient from it, as I knew, and what dangers to follow, not considering that with ye preperation of ye body and diversion of ye humour ye cure could be safely effected."

Then we have "a description of ye qualities and conditions which ought to be in ye surgeon that performeth this or any other operations in chirurgery:—

"First, that he be devout.
Secondlie, charitable to ye poor.
Thirdly, to use few words.
Fourthly, to avoid drunkenness.
Fifthly, to be chaste both in words and gesture, as well as to fear ye not.
Sixthly, not to undertake an incurable disease."

A number of maxims not to be despised in this our nineteenth century. Mr. Walter Hammond goes on to tell us that "the rates and rewards given to ye surgeon three hundred years since (time of Arderne) were, as he saith, of a noble person, for his cure was 90 lb., a linsey gown, and 5 lb. a year during life; for ye others, 40 lb., or 90 marks, with his cloak; and he protesteth that never in his life did he take less of ye poorer patient for his cure than 100 shillings, or 5 lb.; whereby it is evident that Mr. Arderne was better paid in those days, considering that ye rate of silver, ye price of victuals, and ye rent of houses were not ye twentieth ye somme as it is these times (1649), yet I must be thankful that I got from Mr. Wild, in anno 1630, ye somme of 100 lb. for affording ye same cure." King Edward III. himself had given a pension of 6d. per diem for life, or £9 2s. 3d. a year, to Coursus de Gangeland, his apothecary, for taking care of and attending upon him during his illness in Scotland—the first apothecary mentioned by Fœdern in London, in 1345.

On the first page of the original manuscript is written the heading—"*Practiqua Magisteri, Johno Arderne.*"

The old Latin text is closely written, but very difficult to decipher, owing to the many abbreviations used—forty-two in number. For example:—"acc" stands for *accipe;* "cā" for *causa;* "do°," *domino;* "ēē," *esse;* "i" for *id est;* "n," *nisi;* "p+," *potest;* "℞" for *recipe;* and so on. Short marginal notes draw attention to the chief points in the text, while the text itself is profusely illustrated by rude but very curious marginal coloured sketches of flowers, animals, figures, diseased parts, surgical instruments and appliances. There is on the first page a partly obliterated instrument used in blood-letting. At page 10, a face underlined "gutta rosacea in facie;" at page 15, one not unlike "cancrum oris." Following these is a crowned head, a castle, a retort, fire, and bellows, an ulcer on the tibia, worm, animal with a forked tongue, curious drinking measure and hand, several flowers, a pregnant or dropsical woman, a cactus, and many others, the virtues and uses of which are described in the text. The sketch of a cock perched on a tree, at page 69, is very life-like. A penis, with an instrument, headed "ad frangend lapido," figures at p. 109; at page 112, a leg bound up in a curious form of splint; at 116, an illustration of an operation on the foot; 120, orchitis being treated by local depletion. Fistula in ano is profusely illustrated, both as to the diseased parts, instruments, and mode of operation, which seems heroic. The instruments are a double-headed long probe, syringe, a peculiar cutting instrument, a saw of peculiar semicircular shape, with very fine teeth, &c. An owl appears at 219, very well drawn; a very fierce-looking head at 247. A little further on a head and bust dressed in the fashion of the date of the manuscript; another at page 283, and one of the king at 309; and at 321, a coat-of-arms on a shield, argent, a fess, gules, between three martlets proper; below a naked figure of a young person. The cock turns up again at 330; a frog at 339; an operation on the finger, 340; followed by flowers used in the preparation of various potions.

At page 403 are given in order the "Signa fleubotomia formana complexio asteria nubia:"—

Arius	*bona*	*indiffrens.*
Taurus	*mala*	*mala.*
Gemini	*mala*	*indiffrens.*
Cancer	*mala*	*bona.*

Leo	*mala*	*mala.*
Virgo	*mala*	*mala.*
Libra	*bona*	*mala.*
Scorpio	*indiffrens*	*bona.*
Sagittaris	*bona*	*indiffrens.*
Capricaris	*mala*	*mala.*
Aquaris	*indiffrens*	*bona.*
Pistres	*indiffrens*	*indiffrens.*

The moon and stars are shown in various combinations, followed, at page 418, by a curious horoscopè, which takes up the whole page, and headed—"Signo est velox vehemens motus morbi ducens ad santem vel ad agostem."

Some of Mr. Walter Hammond's observations, collected in paper three hundred years afterwards, are curious, but so written as to take much time to decipher. Below are a few:—

"To make oil of sulphur.—Sulphur vini, ℥iijj.; grind it well upon a marble, then put ye same into a glasse, with potassium, ℥iijj., and distil it with a gentle fire."

Mark the signs for the ounce written the reverse of the present mode. Next we have—

"The virtues of turpentine water.—To stop ye bleeding of a vein: set the above on fire, quench it, and then apply it."

"Medicines proper to stop ye flux of blood.—Cumin seeds in powder, suitable for ye bleeding of ye hemrodde; so doth aloes, epaxtica, gallæ, red corrall—these alone or mixed with gum arabeck." Then a powder "to comfort ye stomach and expel wind," of which the principal ingredients are cumin, caraway, cinnamon, ginger, nutmeg, cardamoms, and white sugar, made into a powder; wine mixed with white of egg, to "knit a broken head or bone;" an anodyne, and many curious recipes. He tells us, at page 58, that Mr. Arderne employed as a caustic the following:—"℞., of unslaked lime, ℥iiii.; of black soap, quantum sufficet; mix them together with some fasting spittle."

"A medicine for any kind of cold gout" is described as "a composition made up with assafœtida, euphorbenn, castoreum, and sulphur vini, with wax, make an emplastor;" or, ℞., black soap, 2 parts, of ye yelks of eggs, 1 part; beat up in a mortar, and spread it on leather, and so apply it." At page 163, an illustration of four instruments used by him in the cure of fistula—a probe made of lead, "so that it may be pleased to bend any way;" another, not unlike a modern packing needle; a syringe; and an

instrument he calls a "tendiculum," made of silver, and which he used "in ye case of Mr. Richard Wild," the patient from whom he received the fee of one hundred pounds. At the end of this page is written this note—"My good and loving friend, Mr. Godfrey Guilbert, died about ye 1st September. Ye news was brought me this day, September 5th, 1648;" after which he continues his surgical and medical jottings on the blank paper, commencing with "a very good saline;" next a quotation from Arderne; then an oil made from mallows, and "another composition of the same plant," made in this way—"Take of hollyhock leaves or common mallows two handfulls, boyle same in water till they be soft, strain them forth of ye water, and squeeze them, and fry them in a frying-pan in fresh butter; make into an axungio." After a long interval is a note—"The flowers of elder dried in ye sun, and pulverized; a spoonful given in broath purgeth ye bodie"—the last of Mr. Hammond's not very erudite prescriptions. Probably the disturbed period when he wrote prevented any very elaborate disquisitions. His general education appears to have been very inferior to that of our "Maister Chirurgeon" of the 14th century, whose Latin composition few in the present day could attempt. The latter proves very conclusively that our early surgeons of note were not the ignorant charlatans some would lead us to suppose they were. This manuscript of his must have entailed endless labour and patience, and will long remain a memorial of the first dawn of surgical literature in England, if not the very earliest work of its class. As such it deserves to be most carefully preserved among the College archives.

A READILY-MADE FIXED DRESSING.

Ordinary sand-paper affords a material which Dr. Levis has successfully resorted to in an emergency. The sand-paper is dipped into warm water, to soften the paper and glue, and it is then applied and retained with a bandage. The glue of the sand-paper soon gives rigidity; body and firmness are produced by the sand and paper. Strong fixed dressings, it should be remembered, can be readily prepared with the familiar domestic commodities of starch, or with the combination of eggs and flour.—*Polyclinic*, Aug. 15.

AN IMPROVISED TENACULUM.

The absence of a tenaculum may be well replaced by a small fish-hook secured to a pen-holder.—*Polyclinic*, Aug. 15.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Manual of Gynæcology. By D. BERRY HART and A. H. BARBOUR. Illustrated. Edinburgh: Maclachlan and Stewart. 1882.

WE apologise to the authors of this work for our long delay in noticing it. On turning over its pages it is at once observed that the arrangement is different from most English manuals. It is divided into two parts, with an appendix. The first part is devoted to the anatomy and physiology of the female pelvic organs and the various methods of examining them; the second to the diseases peculiar to these organs; and in the appendix such subjects as syphilis, chlorosis, the ætiology of uterine disease, &c., are discussed. Each part is divided into sections, and these again into chapters, thus making the work very easy for reference. The summary of the literature which precedes each subject is a most excellent plan, obviating to a great extent the necessity for footnotes. Although common enough in German works, we do not remember ever to have seen it previously adopted in an English book. Our attention is also attracted by the profusion of illustration, which adds immensely to the value of the work. Many of the plates are new, and the others have been selected with great care and discrimination from the best sources.

The first section is devoted to Anatomy and Physiology. It may be fairly questioned whether these subjects should be admitted into a work of this kind—the student having, it is presumed, learned them in the dissecting-room and from books specially devoted to their consideration before commencing clinical work. We are not aware of any book, however, in which he will find them so clearly, succinctly, and correctly dealt with as in the manual before us. The description of the arrangement of the peritoneum; of the distribution of the connective tissue of the pelvis; but especially of the structural anatomy of the pelvic floor (a subject which Dr. Hart has himself, by careful and original work, done much to elucidate), show the writers to be

possessed of considerable didactic powers. We next come to physical examination, and, though agreeing with the authors that the bimanual is "the all important method," yet we do not think that the external hand is used to the greatest advantage when "placed obliquely between the iliac crests, its ulnar edge near the promontory and much deeper than the radial one," because the ulnar edge is inferior, as a tactile organ, to the finger ends; nor would it be possible, in case the uterus were found retroflected, thus to "make the diagnosis form the prognosis, and begin the treatment at one examination" (p. 343). "Sims' is undoubtedly the best speculum when properly used, and, aided by the volsella, it leaves nothing to be desired." The Neugebauer and crescent specula, though inferior to it, are better than the Fergusson. "With the development of bimanual examination the use of the sound has become more limited; it should only be used after the bimanual rectal and volsellar examinations have been carefully employed."

We cannot imagine why Tait's and Hanks' dilators should have been selected to be described and figured, being certainly inferior to many others of the same class, especially those of Hegar. It is also, we think, a serious omission that amongst the methods of dilating by incision no mention is made of Schroeder's method, by which the cervix is divided bilaterally, and the uterus forced down over the finger. Thomas' dull wire curette, with a knob by Russell Simpson, is strongly recommended, though it seems to us an instrument little better than a toy. This part of the book ends with an article entitled "Anæsthetics," in which one only of these agents is discussed, and as their administration is not influenced by the sex of the patient we think the subject might advantageously have been omitted altogether.

The second part deals with the diseases of the female pelvic organs. They are classified according to the anatomical structures involved. We do not propose to enter upon a detailed review of this part of the book; but we notice that the authors appear, not only to be familiar with the English and foreign literature of the subjects dealt with, but also to have sifted it very carefully. Commencing with the peritoneum and connective tissue they pass on to the Fallopian tubes and ovaries. The removal of the former in cases of hydrops is recommended, provided they be free or but partially adherent. Battey's operation is as yet on its trial, the exact indications for it have not been settled, or the question as

to whether it is always worth the risk. In ovariotomy all Listerian precautions are to be adopted excepting the spray.

Section V. is devoted to the uterus itself. Emmet's operation for the repair of lacerated cervix is based on correct pathology, but has been performed in a number of cases where it was not called for. Schroeder's operation for the cure of chronic cervical catarrh is said to be a bilateral Emmet's operation combined with excision of the cervical mucous membrane. The term ulceration, so generally applied to the latter affection, should be discarded, as based on an erroneous pathology, and suggesting most pernicious treatment.

Uterine displacements are treated of in a rational and scientific manner. The safest method of replacing the retroflected uterus is by bimanual manipulation. We do not, however, think that it is necessary, as a rule, to use a finger in the rectum. Hodges's pessary does not act as a lever in maintaining the uterus in its place—its action is that the upper bar gives a *point-d'appui* to the posterior fornix. The posterior vaginal wall runs round the upper bar as on a pulley, and as it is inserted into the cervix, the latter is thereby drawn upwards, and the fundus thrown forwards. The other pessaries mentioned in the text are Albert Smith's and Thomas's—modifications of Hodges's. We think that Schultze's pessaries, which act on quite a different principle—namely, the direct fixation of the cervix—should at least have been mentioned.

Under the Ætiology of Fibroid Tumours we come upon the following, which we suppose to be a piece of Caledonian humour:—"Gusserow, to whose exhaustive article, Die Neubildungen des Uterus, in Billroth's Handbuch, we are greatly indebted in this chapter, says in regard to ætiology, 'Ueber die Ursachen der Uterus Myome wissen wir so wenig, wir über die Ursachen der meisten pathologischen Neubildungen, nämlich *nichts*.'" ["Of the causes of fibroid tumours we know as little as of the causes of most pathological new formations, that is *nothing*."] Extirpation of the uterus by the vagina holds out the prospect of a radical cure in cases of cancer, if limited to the body of the uterus, or where the disease, beginning in the cervix, has not extended outwards to the cellular tissue or downwards to the vagina.

The chapter on Displacements of the Pelvic Floor and Prolapsus Uteri is exceedingly well written. The disturbances of the menstrual function are relegated, as they should be, to the end of the book. Membranous dysmenorrhœa is said to be due to casting

off of the superficial layer of the mucous membrane. No reference is made to the views of Montgomery, Raciborski, or Tait, regarding this affection. Many of the subjects which follow might very well have been omitted. The disturbances of the reproductive function, such as abortion and retroflexion of the gravid uterus, are better treated of in works on midwifery; and such affections as fissure of the anus, piles, and syphilis, are not peculiar to women. The hints on case-taking and the tables referring to the sources of gynæcological literature will be found useful. An index of authors and the general index of subjects complete the work, which may be classed amongst the best manuals of gynæcology.

The Dispensatory of the United States of America. By DR. GEO. B. WOOD and DR. FRANKLIN BACHE. Fifteenth Edition, rearranged, thoroughly revised, and largely re-written, with Illustrations. By H. C. WOOD, M.D., JOSEPH P. REMINGTON, Ph.D., and SAMUEL P. SADTLER, Ph.D., F.C.S. Philadelphia: J. B. Lippincott & Co. 1883. 8vo. Pp. 1,928.

THE great progress that has been made in America within recent years in materia medica and in pharmacy has certainly been as remarkable as it has been rapid. While the number of new drugs and of new preparations which have been introduced into practice from that country has been enormous, the commendable publication of a decennial revision of the United States Pharmacopœia has served to eliminate those which experience has shown to be of little value, while it has, at the same time, given an official sanction to such as have proved to be useful. The study of pharmacology also—using the word in the modern significance that Prof. Fraser has given it, as implying the science of the action of remedies—has also been actively followed in the United States; and the unrestricted researches and skilled observations of numerous recent observers in that country have done much in advancing our knowledge of the subject.

At the time of its first publication, fifty years ago, the Dispensatory of Wood and Bache filled for its national Pharmacopœia a position similar to that then occupied by the Dispensatory of Duncan in Scotland, and that of A. T. Thomson in England respectively. The U. S. Dispensatory, however, has since gradually enlarged its scope; and although still very properly giving prece-

dence to the Pharmacopœia of the United States, that of Great Britain is also included; so that the volume under notice may be looked upon as much as a commentary on the British as upon the United States Pharmacopœia.

The present, the fifteenth, edition of the work follows the latest revision of the U. S. Pharmacopœia, in 1880, which was published, we believe, in November, 1882. This was the sixth decennial revision of that great work. The National Pharmacopœia Convention, under whose authority it was issued, was composed—as we learn from the medical journals of the day—of 79 delegates, who entrusted the revision and publication of the Pharmacopœia to a committee of 25 members. As the result of their labours, several important advances and innovations have been made in the Pharmacopœia, all of which receive full comment and necessary explanation in the Dispensatory. In the Pharmacopœia, fluid measures have been abandoned, except in the case of fluid extracts; and all quantities are now expressed in parts by weight—a substitution which doubtless insures more accurate results. In the Dispensatory, alternative quantities are supplied for those who prefer the less onerous process of measuring liquids, or who do not employ the metric system. These formulæ, we are told, have been carefully tested in practice by Prof. Jos. P. Remington, under whose care the sections which treat of Pharmaceutical Chemistry and Pharmacy are produced. The Theoretical Chemistry of the volume has been re-written by Prof. S. P. Sadtler; while the remaining portions, including the articles on the medical properties and uses of drugs, have been ably supervised, and to a great extent re-written, by the senior editor, Prof. H. C. Wood, whose reputation as an authority on such subjects is as acknowledged in this country as it is in his own.

The Dispensatory is divided into three parts. Part I., consisting of 1,558 pages, comprises all the officinal drugs and preparations of the United States and British Pharmacopœias, in alphabetical order. This part contains several new illustrations, chiefly representations of microscopical sections of different parts of officinal plants illustrating their structural characteristics. In addition to the descriptive history, general properties, preparations, impurities, &c., of each article, a very full and perfect account is given of its physiological and medical properties, toxicology, officinal preparations, and pharmaceutical uses. And all the doses are given with their metric equivalents. Part II. (625 pages) embraces a descrip-

tion of non-officinal drugs and medicines, among which are included brief notices of substances not employed in medicine, but connected with the arts, or in domestic use. This portion of the work is very complete, and will be found—as we have found it—of great assistance in the search for information as to the action and uses of new medicines, and in giving references to their literature. In Part III. (67 pages) are included the officinal tests; useful hints on prescribing; examples of metric prescriptions; numerous tables—many of them quite new; and analyses of all American mineral springs of known medicinal value, as well as of a number of well-known European mineral waters. The index alone occupies 78 closely-printed, three-column pages, and furnishes a proof, if one were needed, of the thoroughness, accuracy, and completeness of the work.

A novel feature of this edition is the indication of the pronunciation of the officinal titles by diacritical marks, in the same manner as that adopted in Webster's Dictionary. This we strongly approve of in a standard educational work, such as the Dispensatory is. We trust that it may result in there not being in the future so much of that ignorant and barbarous pronunciation of many words in common professional use, as is at present so often heard.

The Dispensatory calls particular attention in the proper places to the changes made in the strength of certain preparations in the new Pharmacopœia. To some of these it may perhaps be advisable to call attention here. The *Extractum aconiti* (U. S. P.) is now directed to be made from the root of the plant, and is a very much stronger preparation than the hydro-alcoholic extract of the former Pharmacopœia made from the dried leaves, and the English extract made from the fresh leaves. The dose of this new extract is one-sixth to one-quarter of a grain (0·01 to 0·016 gm.); and it would have been advisable to have added the word *radicis* to its title to avoid any possible confusion with either of the other two preparations. Similarly, the *Extractum conii alcoholicum, U. S. P.*, is not identical with the preparation formerly officinal under the same name, a very proper change in its manufacture having been made in substituting the fruit for the leaves, and in the addition of hydrochloric acid—thus making the new preparation not only more reliable, but also considerably stronger. Here, too, in the opinion of the editors of the Dispensatory, the word "fructus" should have been inserted in the title to draw attention to the

fact. The dose to begin with of this extract is one-half to one grain (0·03–0·065 gm.) The best solid preparation of conium, however, is said to be the *abstractum conii*, one of a new class of preparations introduced for the first time into the U. S. Pharmacopœia. These abstracts have the great advantage of bearing a definite relation to the drug they are procured from—viz., twice as strong; and being in the form of dry powder, are conveniently dispensed, and always reliable. The tincture of opium of the U. S. P. now contains about ten grains more opium in the fluid ounce than the British laudanum.

No one who has not looked into this work can form an adequate opinion from a review as to the fund of information it contains. It forms a valuable work of reference as well for the practitioner as for the pharmacist; and it will, we believe, be as popular with, and as useful to, both now as its first edition was fifty years ago.

Royal University of Ireland. The Calendar for the year 1883. Dublin: Alex. Thom & Co. 1883.

The Secretaries of the Royal University have been good enough to present us with a copy of the Calendar for this year—the first of the active existence of the University.

An almanac, a list of changes made while the Calendar was passing through the press, a reprint of the "University Education (Ireland) Act, 1879" [42 & 43 Vict., chap. 65], and of the Charter, make up the first part of the book, which closely resembles the calendars of the extinct Queen's University in its appearance and contents, with the exception that, of course, no mention is made of the Queen's Colleges of Belfast, Cork, and Galway. These Colleges are not affiliated to the Royal University as they were to the Queen's University.

The general regulations as to degrees in medicine and surgery will be found at page 74. From them it is at once evident that a degree in medicine in the Royal University does not represent a full education in arts. Candidates for the degree of Bachelor of Medicine (M.B.) are required to pass the matriculation examination and the first University examination held after the lapse of one academical year from the time of their matriculation. The subjects for both these examinations are—(1) Latin; (2) any one of the following languages—Greek, French, German, Italian, Spanish, Celtic, Sanskrit, Hebrew, or Arabic; (3) a limited course

of English language and literature; (4) mathematics; and (5) experimental physics. The arts education represented by this curriculum is probably equivalent to that of the first, or junior freshman, year of the undergraduate course in the University of Dublin.

The medical requirements meet with our entire approbation, except as regards hospital attendance. We are at a loss to know why only a six months' instead of a nine months' attendance on the practice of a recognised medico-chirurgical hospital is required in the first period of study. In consequence the total hospital attendance demanded of students is only twenty-four instead of twenty-seven months; unless, indeed, the attendance for three months in a recognised lunatic asylum, referred to below, is intended to take the place of three months' general clinical instruction. This is a species of underselling or "cutting-under" in the curriculum which we would gladly see abolished. We note with satisfaction that in addition to the certificates of hospital attendance, candidates will also be required, before presenting themselves for the degree examination, to produce the following certificates:—

(1.) A certificate of personal attendance on at least ten fever cases, such certificate to be signed by the physician under whose superintendence the cases were attended.

(2.) A certificate of having compounded medicine under an apothecary or pharmaceutical chemist for at least three months.

(3.) A certificate of having received practical instruction in vaccination, to be signed by a public vaccinator.

(4.) A certificate of having attended for three months in a recognised lunatic asylum, where clinical instruction on mental diseases is given.

After the year 1883, all candidates for the degree of M.B. will be required to exhibit proficiency in the use of the ophthalmoscope and laryngoscope.

The degree of Master of Surgery (M.Ch.), the diploma in obstetrics, and the diploma in sanitary science, are conferred only on graduates in medicine of the University.

It will not cost much to obtain degrees in the Faculty of Medicine of the Royal University. The total cost of the M.B. degree, including the fee for the matriculation examination (ten shillings) and that for the first University examination (one pound), is £6 10s. The M.D. and M.Ch. cost £5 each; the diplomas in obstetrics and in sanitary science cost £2 each.

The Calendar proper occupies only one-third of the entire volume, for four hundred and thirty-seven pages are devoted to a reprint of the examination papers set in the years 1881-1883.

The first matriculation examination took place in December, 1881; the first examination in the faculty of medicine was held in June, 1882.

In concluding this notice of the Calendar, we may be permitted to wish the new University every prosperity and success.

A Handbook of the Theory and Practice of Medicine. By FREDERICK T. ROBERTS, M.D., B.Sc., F.R.C.P.; Professor of Materia Medica and Therapeutics, and of Clinical Medicine, at University College; Physician to University College Hospital, &c. Fifth Edition. London: H. K. Lewis. 1883. Pp. 973.

As Roberts' handbook is so well known, and as its former editions have been spoken of in terms of such commendation in other journals as well as in this, the announcement of the publication of a fifth edition of the work is almost a sufficient notice of it. From its first appearance, only eight or nine years ago, Roberts' has been the favourite text-book on medicine with students. This popularity it deservedly merits from its intrinsic worth, and from the care with which each of the rapidly-succeeding editions is brought out, so as to be on a level with the teaching and knowledge of the day. In this way the requirements are met both of the student preparing for examination, and of the practitioner seeking concise information with regard to the progress made in his profession, and a reliable guide as to the nature, recognition, and treatment of disease.

In the present edition Dr. Roberts has returned to the original plan of issuing the work in one volume; in doing this we think he is right. Several new subjects have been introduced, especially in the chapters on Diseases of the Nervous System; and, amongst other matters of recent interest, we find a *résumé* of the chief points bearing upon the supposed infectious nature of tubercle, together with an illustration of Koch's *bacillus tuberculosis*. The tests for albumen in urine, lately introduced by Drs. Pavy, Oliver, and George Johnson, are also mentioned; and in every way the work maintains the high standard of excellence which former editions were universally awarded.

Hospitals, Infirmaries, and Dispensaries; their Construction, Interior Arrangement, and Management, with Descriptions of existing Institutions, and 74 Illustrations. By F. OPPERT, M.D., M.R.C.P.L. Second (English) Edition, Revised and Enlarged. London: J. & A. Churchill. 1883. Pp. 278.

THIS work will be useful, containing much varied information on hospitals in general, and descriptions, often accompanied by plans and sections, of a large number of important buildings devoted to the reception of suffering humanity. It is a little too much to say that the author has, in this edition of his book, "endeavoured to include all the most noteworthy establishments in existence;" nor can he be said to "describe" many of those included in his enumeration. The work, however, has been well received, having passed through two German editions, and being in its second English edition.

Part I., consisting of 85 pages, discusses—1. Hospital construction. 2. Administration of hospitals and charitable institutions. 3. Special hospitals. 4. Hospices and workhouse infirmaries. 5. Dispensaries. 6. In-door relief by visiting the poor at their houses. In Part II. about 300 hospitals and kindred institutions are noticed in more or less detail.

The first point considered is the *size* of hospitals, and the arguments in favour of large institutions or small are fully stated. The question does not concern large cities, which must have, on the grounds of economy and convenience, large hospitals; nor small towns, for whose needs small hospitals will suffice. In towns of intermediate population the aggregation of large numbers of sick under one roof can, and ought to be, avoided. Dr. Oppert estimates that hospital accommodation for the sick poor should be provided in the proportion of four beds for 1,000 inhabitants. He concludes with a wise caution that a hospital should have "the right dimensions at the commencement. To enlarge hospitals is, in general, unadvisable. It was frequently done formerly; but unless the eventuality is foreseen and considered in the original plan, it leads to faulty arrangements and dispositions." In the 4th section, on Drainage, we are amazed to find cesspools mentioned as possibilities! "Fœtid emanations are avoided," we are told, "by syphon-pipes." "Cesspools are emptied of their contents as often as is necessary; generally some means are used for deodorising them!" A cesspool is an abomination anywhere,

but a hospital cesspool is simply monstrous. Nor is the 11th section, on Water-closets, at all satisfactory. Dr. Oppert highly approves of these very doubtful appliances. It is not our experience that "there are no better means for banishing disagreeable smells from hospitals than the water-closets." It is evident that our author has never seen a hospital in which the dry-earth system of conservancy is carried out. Indeed he does not even mention dry earth from one end to the other of his book! A comparison of the dry-earth latrines of the Madras General Hospital with the water-closets of the corresponding institution in Calcutta, would have opened his eyes and modified his views. It is very much to be regretted that dry-earth conservancy has made so little progress in these countries. In London, indeed, it could not be carried out; but in towns of moderate size, and perhaps even in our own city, it could be, and ought to be, applied to a considerable extent in supersession of the water closet. Can the statement in section 16 be true—that "common bath-rooms are as yet rare in English hospitals, whereas general hospitals on the Continent are seldom without them?" Section 18, on Ventilation, is a valuable one, giving a description of various means of natural and artificial ventilation, and simple methods of testing the atmosphere of rooms.

There are some points in the second chapter—on the administration of hospitals—which deserve notice. Dr. Oppert contrasts the Paris system, in which the institutions are supported by Government, and controlled by a central board appointed by Government, with the London plan of supporting hospitals by voluntary contributions, and managing each by a separate committee; and not to the advantage of the latter method. He says:—

"They may be well constructed and managed in both places, but there is one great difference resulting from the English mode which cannot be passed over in silence. The subscribers to private institutions expect certain rights and equivalents, especially that of recommending patients for admittance. Now, this excludes general admission, as a rule, however frequent the exceptions may be. Therefore, the persons for whom we erect the hospitals—viz., the sick poor, are deprived of their legitimate rights. Those who most require admission are not the class known to governors. To be afflicted with sickness should be the only valid and sufficient reason on which a poor person is entitled to admission. If the patients are admitted by letter, those often become inmates of the hospital who are much better out of it, and those are not admitted who

live in wretched lodgings. In the country you often find the hospitals filled with trivial cases, especially in the first half of the year, when the governors are well provided with letters; the poor, who suffer from the most acute and serious diseases, are treated at their homes, where the conditions for recovery may be marred by want of the necessary cubic space, nursing, and proper food. Even in London delay and difficulties arise when a sick and poor person wants to be admitted, as letters are only given out on one day in the week. It might be said that for those who cannot be received into the general hospitals the workhouse infirmaries are open. The latter, however, are not as yet so perfect in their arrangements as hospitals, and they receive principally those who fall ill among the persons living in the workhouse; they are also small, containing generally about 100 or 200 beds."—(P. 47).

This is not a cheerful description of the working of one department of English charity, of which we sometimes hear so much. In Irish hospitals the system of admission is on more liberal principles than in England; no letters are "required, and no disease is excluded, with slight exceptions." Dr. Oppert concludes that "centralisation works more cheaply than self-government," and evidently prefers it on the whole—making an exception, however, in the case of special hospitals, which ought, he thinks, to be free institutions, "with the exception of Lock Hospitals." "Female Lock Hospitals should be founded and supported by Government."

In the 7th section, on Diets, a table is given, showing "ordinary diet for males" in 16 English, 3 Scotch, and 2 Irish hospitals, and in 1 Parisian and 1 Berlin hospital. We note that the allowance of meat in one of the Dublin dietaries is certainly inaccurately stated; and we cannot, therefore, feel sure of the correctness of the other items. In section 9 we are informed that "physicians or surgeons attached to Continental hospitals or institutions of a similar kind receive a salary for their services. . . . The most celebrated medical men in Paris, Berlin, Vienna, and other cities, do not decline to take it, nor do they lose caste by it." We are strongly of opinion that this should be the invariable practice in these islands too, seeing no reason why the services of medical officers should be gratuitous any more than those of the chaplain or the legal adviser. The remarks on "lady nurses" are amusing (section 10). "Ladies have tried their hand as amateur nurses, but I believe they are a failure. Their well-meant efforts are not always crowned with success. To mention one instance—the soldiers in the Herbert Hospital (Woolwich) did not like their lady nurses, and

nineteen out of twenty called for their old ignorant nurses. These ladies are too much above the station of the sick in hospitals, and, however willing to do the meanest services, are not so fit for them as other nurses."—(P. 56).

In the third chapter of Part I., Dr. Oppert discusses Special Hospitals. He has something to say in favour of them, "but as soon as the special establishments multiply in such a manner that for almost every disease one is called into life, they become a nuisance and an absurdity. The means of the subscribing public, which is limited, become squandered in a disadvantageous manner, the celebrated medical schools are robbed of many cases which would afford valuable instruction, and a number of small establishments are founded which cannot be under proper public control. The principal advantage is derived by those who have a certain interest of their own for promoting their institution." He is very tolerant, however, when he comes to details, drawing the line *above* hospitals for fistula, stone, and toothache. Throat hospitals he does not mention at all; but he probably would think diseases of the throat, also, "might very well be treated in the surgical wards of general hospitals." In the section on Hospitals for Consumption and Diseases of the Chest we were surprised to find "that recently the vacillary tuberculoseos has been discovered," and "vacilli" in the same paragraph—the work being, in general, carefully printed.

Part II., containing 185 pages, is devoted to descriptions, more or less detailed, of hospitals in various parts of the world. India, we observe, is represented by a single hospital, the European General Hospital at Bombay, while 23 London institutions are noticed. Eighteen Dublin hospitals, besides "St. Michael's" (Kingstown) are described. Unfortunately, we know something of these institutions, and a mental comparison of their actual condition with Dr. Oppert's representations of them shakes our confidence in his accuracy with respect to other hospitals. Thus we are told that "medical schools are attached to almost every Dublin charity," including the Meath and the Adelaide Hospitals. Jervis-street Hospital is described as containing 60 beds. "The Meath Hospital"—it is stated—"*lies in the country* to the south of Dublin. . . . A celebrated school is attached to the hospital." The author criticises the arrangements at Mercer's Hospital with severity. "Here," he says, "we find wooden bedsteads, without curtains, straw mattresses, and in lieu of water-closets or privies only night-stools (unless this has been changed

lately)." Surely Dr. Oppert does not approve of bed-curtains and privies as adjuncts to the hygiene of a hospital. Steevens' (or, as it is spelled in the book, "Stevens'") Hospital "lies to the south-west of the town." "The bedsteads are of iron, and have straw mattresses, and in one ward (accident ward) the floor is tiled." Summing up the other hospitals Dr. Oppert says there are "also an orthopædic and lunatic hospital"—truly a quaint combination!—"a Maison de Santé, and a fever hospital (Cork-street) for 200 patients; it was established 1704, and consists of four blocks, each four floors high." This description of Cork-street Fever Hospital is erroneous. Disregarding the misprint "1704" for "1804," we have to remark that the "New House" or Fever Hospital is built on the pavilion system—a fact which should be mentioned, as Dr. Oppert had already stated that, as regards construction, almost all Irish hospitals are built on the corridor plan. And of the four blocks, one is wholly occupied as a residence by the officials of the institution, while another is a "House of Recovery" for convalescents.

The International Encyclopædia of Surgery. Edited by John Ashhurst, junr., M.D.; Professor of Clinical Surgery in the University of Pennsylvania. In six vols. Vol. III. London: Macmillan & Co. 1883.

The third volume of this great work has now been published, and it upholds very distinctly the high merit which has so far characterised the editor's undertaking. The value in which the Encyclopædia is held is shown by the fact that already the volumes issued have been translated into the French and Italian languages. Seven authors divide the work of the present instalment among them, and they have discharged the duty allotted to them with marked ability and comprehensiveness. There are two chromo-lithographs and 236 engravings. Of these latter we think more might have been made. In noticing the first volume we referred to the inferior quality of some of the illustrations, and we are still of opinion that the excellence of the work is marred by deficiencies in this department.

The principal feature of the third volume is the series of articles on Injuries and Diseases of Blood-vessels. The authors are—Dr. John Lidell, of Bellevue Hospital, New York; Dr. John Wyeth, Professor of Surgery in the New York Polyclinic; and Mr.

Richard Barwell, of the Charing Cross Hospital, London. The essay on injuries of blood-vessels is very full, and is enriched by cases quoted from the Surgical History of the American War. The different methods of treating hæmorrhage receive ample notice. One of them, although some years in use, is not widely known, and is worth producing here :—

"Dr. G. C. E. Weber, of the Medical Department of the University of Wooster, at Cleveland, Ohio, proposes to constrict the mouths of arteries divided in amputations, by turning over their ends with a little instrument, called an aërteriverter by Dr. Weber, but quite similar to the fine double hooks, operated by a sheath, the invention of M. Lüer, of Paris, and called by him *fixateur à gaine.* With this instrument the ends of the divided arteries may be retroverted, as one turns over the cuffs of his coat in rolling up his sleeves. This method is designed to reinforce the cut extremity of an artery by the duplicature of its walls, thus surrounding its open mouth with such a quantity of arterial muscular and elastic fibres as to effectually close it against the impulse of the heart's action.

"The operation is easily performed by introducing the hook-end of the instrument into the artery up to the point where the reflexure of its walls is to be made, and there planting the hooks in the inner and middle coats; then by grasping the end of the artery with forceps, held in the other hand, and slipping the section of the vessel embraced between the two instruments over the first, on the hooks as over a fixed point (Figs. 405 and 406), the inversion of this part of the artery is readily secured. After the retroversion is effected, there always remains a strong tendency for the vessel to unrol itself again, due to the pulsatory movements of the artery itself; this may be met by inserting a fine, smooth, steel peg, made of the end of a number twelve English sewing-needle (Fig. 407.)

"Dr. Weber has operated by this method with success on the femoral, the brachial, and the anterior and posterior tibial arteries, in amputations of the thigh, arm, and leg. He claims, from his own experience, that this method of treating arteries is a justifiable proceeding, and that it possesses a decided advantage in leaving scarcely anything but living tissues in the wound. The value of this operation, however, is not yet determined."

The chapter on Aneurism is very well done by W. Barwell, who has of late years shown remarkable industry in this branch of surgery. Having referred to the method so well known as that of Mr. Jolliffe Tufnell of Dublin, he observes:—

"I cannot but think that the reaction against the too copious and frequent bleedings of our forefathers is somewhat excessive. Indeed, at

the present day, if a patient should be bled to the amount of a pint, his friends would, probably, ascribe all the subsequent evils, inseparable from his disease—perhaps even his ultimate death—to the venesection. Nevertheless I have no hesitation in saying that in certain cases a suitable and perhaps a reiterated bleeding would, at the commencement of treatment, save much time, and enhance the efficacy of the diet system. This would more especially be the case when, from pressure upon large veins, much congestion existed—the air-tubes being narrowed and the lungs hardly able to aërate the quantity of blood sent to them. In all such cases, to diminish the mass of blood in the system gives rapid relief, but this must be done cautiously, since syncope must not be risked. The mere influence of bleeding on the action of the heart is, however, not the only point to be considered; its effect on the blood itself is well ascertained, and even more important—namely, rapid coagulation. This has been well shown by Thackrah, Gulliver, and others, and is one of nature's most potent means of arresting hæmorrhage. In such cases the facility with which the blood coagulates is in very close proportion to the amount which has been effused.

"Medicines, therefore, which act by simply reducing the force and rapidity of the heart's action, cannot tend as directly to the cure of aneurism as a bleeding which has an equal cardiac influence; but they may in other ways be less injurious, and their effects may certainly be recovered from with less difficulty. Thus, such drugs as *belladonna*, or its alkaloid,[a] *hydrocyanic acid*, may be used, and with a certain advantage. The former drug has the effect, in thoracic aneurisms, not merely of lessening the rapidity of the heart's action, but also of alleviating pain; and, more especially if there be dyspnœa, of diminishing the laborious efforts of obstructed respiration. I have found less benefit from *digitalis*. Great caution in the use of this drug is necessary, since its action appears cumulative; and after long administration, with apparently little effect, it occasionally retards the cardiac pulsation suddenly, and sometimes to an alarming extent. *Tincture of aconite*, in from two to five minim doses, every three or four hours, will generally rapidly reduce the pulse to sixty in the minute, and to a more feeble beat. The action must be carefully regulated. A case of Dr. Pancoast's (subclavian aneurism) got well while the patient was suffering from a poisonous

[a] "The most reliable, and, indeed, the only stable compound of atropia is the salicylate. The formula is this :—

Take of Atropia,	. .	5 grs.
Salicylic acid,	.	7½ grs.
Hot water, .	.	10 fluid ounces.

Rub the atropia down first into a very fine powder, then little by little mix the salicylic acid with it; add slowly the hot water. The whole must dissolve, and the solution must measure or be filled up to 10 fluid ounces. The dose is 10 minims—that is, $\frac{1}{100}$ grain of atropia."

dose of aconite given by mistake. *Veratrum*, if used at all, may be most safely employed as veratria ointment over the chest, if the skin be unbroken.[a] The action should, however, be very carefully watched. In one case in which I thus used it, relief, and I think a certain amount of retardation in the growth of the tumour, ensued.

"*Bromide of potassium* is of decided advantage when pain or irritation arises from direct pressure on nerves. I have seen the irritating and distressing cough which is caused by disturbance of the recurrent laryngeal nerve, in certain cases of thoracic aneurism, much mitigated, and in one or two instances almost subdued, by twenty-grain doses of this drug; I have seen, also, severe pain from pressure on the popliteal nerve almost disappear.

"*Iodide of potassium* has by some writers been greatly extolled. It was first employed in aneurism by Dr. Chuckerbutty, of Calcutta, who noted the consolidation of an aneurism while the patient was for some other disease taking large doses of that drug. Since then it has been by some surgeons largely employed. My own experience, like that—as he tells me—of Sir William Gull, and that of Mr. Holmes,[b] is not favourable, although under certain conditions, to be named immediately, the drug may alleviate. There is, since direct experiment on the human subject is inadmissible, very great difficulty in either proving or disproving the value of a drug in this sort of malady. We cannot isolate it; we cannot give the drug and do nothing else. Thus, in turning to published records we find always that patients who come under treatment are placed at entire rest, debarred from stimulants, and given low diet; when, if the iodide be administered, the advantage gained is put down, in whole, or in great part, to the use of the drug. Nor have I been able to find a single case in which the medicine, given without these more potent elements of success, has proved curative of the aneurism. On the other hand, there are a great many[c] records of patients who, after improving under the whole system of rest, diet, and drug, have got tired of restraint and resumed their ordinary mode of life, and then, though still taking large doses of the iodide of potassium, have quickly relapsed, and generally rapidly died.

"The theory of the syphilitic nature of atheroma and aneurism is one reason for the belief in the value of iodine; another is the fact that, under certain circumstances, this drug undoubtedly relieves a species of pain which accompanies the growth of certain aneurisms. That wearing and peculiarly distressing pain which is produced by pressure of the tumour on bones and periosteum, is undoubtedly mitigated—may even

[a] "The United States Pharmacopeia preparation is 1 in 25; the English, 1 in 60."

[b] "System of Surgery, second edition. Vol. III. P. 437."

[c] "These are so scattered and so multitudinous that it would be useless to refer to them."

for a time be entirely subdued—by taking from forty to ninety grains, in the twenty-four hours, of iodide of potassium. Hence a relief of symptoms which by no means implies improvement of condition.

"The value of iodine given internally is most marked in periostitis, chronic thickenings, and slow inflammatory enlargements, whether strumous, syphilitic, or rheumatic; in fact, in such conditions as culminate in fibrous or fibrillating deposits. But all cures of aneurism, save those by suppuration and sloughing, are based upon coagulation—upon the fibrillating qualities of the blood—which is antagonised by iodine. I cannot but think that the very rapid relapse and quick progress of the disease which overtakes many aneurismal patients, who at first seemed to derive benefit from the rest and the iodine, is often due to a non-coagulating condition of the blood, produced by large doses of this drug."

Aneurisms of the aortic arch have proved difficult of treatment by surgical means. Direct dealing with the sac has not warranted the hopes that were first excited by the proposal, but distal ligature appears in selected cases to be a justifiable procedure. In 1865, Mr. Heath tied the subclavian and the carotid simultaneously with the result that the patient lived four years and seventeen days, when the aneurism was found to be "practically cured." Stimson operated in 1879, and the patient still lives; Barwell in 1877, aneurism cured; Little in 1877, patient lived forty months, aneurism cured; King in 1880, patient lived fourteen months, aneurism cured; Barwell in 1879, patient lived fifteen months, aneurism cured; Lediard in 1880, patient lived eight and a half months, aneurism solid. This is a fairly good series of results. Mr. Barwell's observations are very important:—

"A certain number of patients suffering from aortic-arch aneurism have undoubtedly got well under treatment by rest and medicines. These cases, however, are but few; the great majority of these patients either receive no benefit or quickly relapse. Hence every such case should be sedulously watched, that failure of treatment may at once be recognised. Especially should the commencement of pressure on the air-tubes be carefully observed, because increasing dyspnœa is not only a sign that the aneurism is becoming larger, but shows that the rest treatment is no longer possible. There can be no repose for one who is now and again convulsed with violent cough, and whose every breath is labour. Moreover, as my late lamented friend, Dr. Pearson Irvine, conclusively showed, partial occlusion of the windpipe brings on a certain form of pulmonary disease, chiefly due to obstruction in the

exit of air.[a] This disease of itself would destroy life, even if the aneurism could be cured. Therefore any considerable difficulty of breathing should be a strong inducement to operation, unless the circumstances be unfavourable.

"We should, however, have clear rules for guidance as to which cases will, and which will not, benefit by such treatment. Furthermore, we have to discriminate between the suitability of two operations—namely, that on the left, and that on the right side of the neck. In order, therefore, to save space and time, I will put in the form of a summary the conditions which should guide us in our choice. It must, of course, be understood that only the principal, not the minuter points, can be thus summarised, and that in their combination certain of the symptoms may, especially if early in the case, be wanting.

"(1) *For Deligation of Left Carotid.*—Tumour symptoms upon, and somewhat, but not far, to the left of middle line, and rising into episternal notch, or beneath left sterno-mastoid. Left venous congestion; alteration of left carotid, and to a much less degree of left radial pulse. Paralysis of left vocal cord; obstruction to entrance of air, equal on both sides of chest; sometimes alteration of left pupil.[b]

(2) *For Deligation of Right Carotid and Subclavian.*—Tumour symptoms on right of median line. Marked changes in right radial and carotid pulse. Venous congestion on right side, affecting first and chiefly head and neck. Afterwards, with increase of tumour, right arm and chest, and right vocal cord, may be paralysed.

"Tumour symptoms on right of and upon mesial line, running up to sterno-clavicular joint and episternal notch; venous congestion on left side; alteration of right pulse (radial and carotid); tracheal dyspnœa.

"Tumour further to the right, and lower (second space); congestion equal on both sides; no marked difference between the two pulses; heart displacement, chiefly outward.

"Pressure on right bronchus; left lung perfectly free; with puerile respiration, and perhaps emphysema.

"With any of these conditions, changes of the right pupil may be combined.

"(3) *Doubtful Signs, only to be Read by the Light of other Symptoms.*—Venous congestion on the left side; tracheal dyspnœa; dysphagia.

"(4) *Operation should be Avoided.*—When tumour symptoms reach widely on both sides of mesial line. When, with paralysis of left vocal cord, there is obstruction of right bronchus. When 'locomotive' pulse,

[a] "Pathological Transactions. Vol. XXVIII. P. 67."

[b] "I would carefully exclude such aneurisms as spring from the aorta beyond the orifice of the left carotid, as more likely to be injured than benefited by tying that vessel; whether any such cases could gain by deligation of the left subclavian is doubtful, or has at all events not yet been proved."

thrill, and double murmur, show considerable aortic incompetence. When there is mitral disease or considerable cardiac hypertrophy.[a] When there is, in the course of the aorta, the rasping sound of calcification or advanced atheroma, more particularly if the superficial vessels are felt to be rough and rigid. When there is pain about the spine and intercostal nerves; when there is obstruction of the left bronchus only; when there is pressure on the left apex, and expectoration of frothy blood. To these positive signs I would add a negative one—viz., the symptoms being so indefinite as to render any diagnosis as to the site of the aneurism doubtful.

"[The editor has, in his chapter on aneurism,[b] tabulated or referred to 33 cases of simultaneous, double, distal ligature, the aneurism in 23 cases having involved the innominate, and in 9 the aorta, while in 1 the aorta was dilated though not aneurismal; of the whole 33 cases, 17, or more than half, terminated fatally, while in 13 decided benefit, of greater or less duration, was experienced. The additional cases referred to by the editor are those of Browne (recovered), Denucé, and Marsh, and the fatal cases of Hutchison, Pollock, and Maury.]

"It will be observed that in nearly all the cases which were followed by rapid death, the autopsy revealed diseases of the heart, of the aorta, or of both. Therefore, the state of these parts should always be carefully investigated. In the present state of our knowledge, we may not always be able to diagnose atheroma of the aorta, or even a certain degree of dilatation; but it may often be inferred, though not absolutely made out. At all events it is well to point out what conditions injuriously affect the death-rate of the operation, which should never be lightly undertaken without due knowledge of what to seek, and what circumstances should deter.

"*Consecutive double deligation* has usually been employed in consequence of a hope that tying one of its branches would cure an innominate aneurism, the other branch being secured when, after a certain interval, improvement only, and not cure, has resulted. The operation may also, however, be undertaken because the surgeon, intending to tie both

[a] "Aneurism of the aortic arch offers a certain resistance to the blood-stream, and thereby is rapidly productive of a certain cardiac hypertrophy. Unless this be severe, it need not negative operation if the valves be sound; a much smaller hypertrophy is deterrent if there be also aortic incompetence. Perhaps it will be well also to point out a circumstance which should induce us to insist strongly on operation with as little delay as possible. Aneurisms of the ascending and cardiac part of the transverse aorta cause the mass of blood a little above the valves to be large in amount; hence it falls with undue force on the valves, which can be heard to close with violence—the door is slammed rather than shut. If this be allowed to go on, incompetence will soon be produced."

[b] "Principles and Practice of Surgery. 3rd ed. Pp. 565 *et seq.* Philadelphia, 1882."

vessels, has reason, from the condition of the heart and aorta, to dread doing so simultaneously."

M. Nicaise, of Paris, writes a chapter on Injuries and Diseases of Nerves, with special reference to the modern treatment of nerve-stretching. It gives a succinct account of all that is known of a very difficult subject, and is particularly valuable just at present, when we are not very well informed concerning the mode in which the treatment acts.

The other articles are—Injuries and Surgical Diseases of the Lymphatics, by Mr. Edward Bellamy, of Charing-cross Hospital, London; and Injuries of the Joints, by Dr. Edmund Andrews, Surgeon to the Mercy Hospital, Chicago.

Gout in its Protean Aspects. By J. MILNER FOTHERGILL, M.D. London: H. K. Lewis. 1883. Pp. 303.

THIS handy volume, styled Part II., is uniform with Part I., which is entitled "Indigestion and Biliousness," and is meant to give the reader a broad view of what has been written about gout. There are thirteen chapters in the work, but we did not find, as we had expected, one on the subject of "suppressed gout." It was with some eagerness we turned to see what the author had to say on this remarkable form of the disease, and with all the more eagerness because our personal experience of it is absolutely *nil*. As might be expected, Dr. Garrod, to whom the work is dedicated, is frequently referred to.

Medical and Surgical Report of the Tyrone County Infirmary for the Year 1882. By EDWARD THOMPSON, M.B.; Surgeon to the Infirmary. Omagh. 1883. Pp. 9.

WE have received the Report of the County Tyrone Infirmary for the year ending the 5th of January, 1883. During the twelve months 353 patients were admitted to the Institution, 50 remained in the Hospital from the previous year, 845 selected patients from all parts of the county were treated externally, 45 trusses were issued, and 95 patients were refused admission, their cases being considered unsuitable for hospital treatment. The Surgeon of the Infirmary expresses his regret that the Report of the Institution this year must be clouded to some extent by a recent melancholy outbreak within its walls of a most virulent type of erysipelas,

which necessitated the closing of the Institution for nearly two months. It is only right to say that this disease was very prevalent in the neighbourhood during the early part of the year, and that it did not originate in the County Infirmary. During the two months the Hospital was closed it was completely repainted and whitewashed, and some most necessary sanitary improvements were commenced, which cannot fail, when completed, to effect a lasting and much-required improvement. Notwithstanding that the Hospital was closed for a considerable portion of the year, the tables appended to the Report clearly show what a great amount of useful work was accomplished, and what an amount of human suffering was relieved within the walls of the Infirmary.

The cases discharged from Hospital were classed as follows:—Medical, 143; surgical, 176; diseases of the eye, ear, &c., 28; diseases of the skin, 28. Fifty-four operations were performed, including one amputation of the thigh, three amputations of the breast, one amputation of the ear, one amputation of the foot, one amputation of the forearm, two amputations of the tonsils, six excisions of epitheliomas of lower lip, eight removal of tumours, one enucleation of eyeball, one hare-lip, four operations to remedy the deformity of single and double club foot, &c., &c. Fifteen fractures and four dislocations were under treatment during the year, and all made good recoveries. There were only ten deaths, representing an average mortality of 2·2 per cent. The total expenditure was £1,320 6s. 10d., and the total income £1,437 16s. 8d., thus leaving a welcome balance in the treasurer's hands. The average number of patients in the Hospital during the year was 32, and the cost per bed occupied was £41 5s. 6d. The average duration of each patient in the Hospital was 26·5 days, and their average cost was £3 10s. 5d.

Sanitary Contrasts of the Crimean War. By SURGEON-GENERAL LONGMORE, C.B.; Professor of Military Surgery in the Army Medical School, &c. London: Charles Griffin & Co. 1883. Pp. 31.

AT a time when so much attention is directed to the medical department of our army and its relation to the military authorities and other departments of the service, this *brochure* of Surgeon-General Longmore appears opportunely. Its avowed object is to afford an opportunity of studying the sanitary history of the

Crimean war by contrasting the states of health of the French and British troops during that campaign. That this is done with ability and conscientious precision, all who are acquainted with the author will understand. But from the readiness with which our successive Governments, heads of departments, and military commanders neglect or ignore the lessons taught by past experience, Prof. Longmore's retrospect, it is to be hoped, will aid in accomplishing a more important object, which, however, he does not mention—namely, that of placing our military medical and sanitary organisations on a more perfect footing than they at present occupy.

During the Crimean war the British and French armies were similarly situated in every respect, except in respect to their conditions of health. Therefore, when the sanitary conditions of the two forces are compared, during both the earlier and the later portion of their service in the Crimea, a study of the condition of one army will be found to contribute to the elucidation of the causes of the opposite condition which existed in the other at the same time. The occupation of the Crimea lasted nearly two years; and, for the purpose of comparison, Mr. Longmore separates this period into two terms—viz., from September, 1854, to June, 1855, and from July, 1855, to June, 1856. During the first of these terms the general health of the British army was singularly bad, and the mortality excessive; while the French troops had no more than an ordinary amount of sickness for active service. These conditions, however, were completely changed during the second year. The British were in conspicuously good health, but the French sickness and mortality was enormous. The figures and statistical tables showing this extraordinary change, and the different aspects in which it showed itself, are fully given by Mr. Longmore. The contrast worked out by them may, to some extent, be estimated by the statement that although the effective strength of the British force was considerably greater during the latter than it was in the first part of the war, the ratio of *decrease*, on comparing the deaths—those from cholera and wounds being excluded—in the first four months of 1855 with the corresponding months of 1856, was no less than 97·05 per cent.; while in the French army for the same period the mortality showed an *increase* of 57·43 per cent., the mortality being respectively 86·867 and 136·758 per 1,000. Again, of the total deaths from disease in the British army during the whole campaign—

amounting to 16,297—63 out of every 100 of the total occurred during the first winter, while only 3·38 out of every 100 took place during the second winter.

The two great factors to which, according to Prof. Longmore, the ill-health of the English army in the first year was due, were the want of preparedness on the one hand, and the neglect of even the elementary teachings of sanitary science on the other. The climate, of course, was the same as regards both armies; but the French started with the necessary equipment for service in the field, and a well-organised and sufficient transport and hospital establishment, while the British army "was melting away by its side." The remarkably improved condition of our force during the second winter was secured by an extravagant outlay, the result of an aroused public opinion, voluntary aid, and the labours of the Royal Sanitary Commission, all of which would not have been of much use to the army if it had had to leave its stationary quarters before Sebastopol for even a single day.

Prof. Longmore describes the agencies which brought the French army to the low ebb to which it became reduced in the second winter; the result chiefly, in his opinion, of neglect of the sanitary department and the subordinate position assigned to it by the authorities.

A short appendix deals with the history of the two outbreaks of cholera in both armies during the war. These epidemics appear to have acted independently of the causes, such as privations, exposures, and unhygienic conditions, which developed other camp diseases. In both epidemics the disposition of the disease to attack healthy men who had recently arrived in the Crimea, rather than those who had been longest exposed to the fatigues of the campaign, was a marked feature.

As Miss Nightingale has said, referring to the sanitary state of the English forces, the campaign was a most complete experiment in army hygiene. But the instruction afforded by it becomes more than doubled when it is studied, as Prof. Longmore so accurately gives us the means of doing, in relation to the opposite conditions which existed in the French army at the corresponding periods. We trust that the lesson may be taken to heart, and especially as it bears upon the influence and independent sanitary authority which our latest campaign, as well as the Crimean one, has shown the army medical officer should possess.

Guy's Hospital Reports. Vol. XLI. Being Vol. XXVI. of the Third Series. London: J. & A. Churchill. 1883. Pp. 515.

THE volume contains twenty articles, among which will be found some of interest to workers in every department of medicine. They are:—In Memoriam—Joseph Towne, Modeller to Guy's Hospital for 53 years; a case of phosphorus poisoning, which ended in recovery under the administration of oil of turpentine; a case of symmetrical softening of the corpora striata, followed by bilateral descending degeneration, with secondary anterior poliomyelitis; exophthalmic goître, with mental disorder; cases of empyema in children treated by removal of a portion of rib; abnormalities observed in the dissecting-room of Guy's Hospital during sessions 1880–81 and 1881–82; two cases of pulsatile tumour at the root of the neck; the surgical affections of the tongue; on hemianæsthesia; saturnine lunacy; on acute gonorrhœal rheumatism; some remarks on the minute anatomy and origin of the enchondromata of the salivary glands; report of a case of idiopathic anæmia of Addison, since called essential, pernicious, or progressive anæmia; poisoning by aconitine; laboratory notes on the working of the histology class; case of paralysis of the abductors of the vocal cords; cases of multiple small abscesses of the liver; pes valgus acquisitus; pes pronatus acquisitus; pes cavus; lead-poisoning; on the vitreous body in its relation to various diseases of the eye. The papers are followed by a statistical summary of patients treated in Guy's Hospital during the fours years (1879–1882).

The plates and woodcuts are of the usual style in this classical journal.

A Treatise on the Diagnosis and Treatment of Diseases of the Chest. By WILLIAM STOKES, M.D., D.C.L., Oxon., F.R.S. Edited for the New Sydenham Society by ALFRED HUDSON, M.D. London. 1882.

THERE may possibly be some difference of opinion as to the wisdom of the New Sydenham Society in re-publishing a volume which has for many years been out of print—one which was the work of a great mind in its prime, and a treatise which, as Dr. Acland observes, was in its time as complete as it was masterly. From obvious causes, it cannot now, as then, faithfully reflect the

position of advanced medical thought, and the additions contributed from the author's note-books and separate memoirs, with the exception of those relating to cancer and gangrene of the lung, can scarcely be regarded as of first-rate importance, and in any case do not seem to have been carried by the distinguished author later than the year 1856. Dr. Stokes was a truly great man, endowed with a noble and generous mind, holding liberal and comprehensive views, and full of kindly charity and sympathy for suffering. His fame as one of the foremost physicians of his age may, we think, rest securely upon his two main works—on "Diseases of the Chest," and on "Diseases of the Heart and Aorta." Each of these treatises is to be reckoned a "historical landmark in medicine," and it was from this point of view, as it would seem, that Dr. Hudson undertook the editing of the volume under notice. It was given to the world in 1837, twelve years subsequent to the publication of the author's tract on the "Stethoscope"—now scarce—and sixteen years before his crowning work on "Diseases of the Heart" appeared—an enduring monument of Stokes' genius and powers of clinical observation.

It would be an impertinence to enter into any detailed notice of a book which is universally esteemed one of the medical classics, and it is sufficient to point out the principal changes which have been made. No alterations appear to have been introduced into Sections I.–III., which embrace 266 pages. The chapter on Pneumonia consists partly of the text of the original work, and partly of passages from the note-book of the author. That on Gangrene of the Lung contains, first, a reprint of the brief chapter in the first edition, and, secondly, a reprint of a more elaborate memoir in the *Dublin Quarterly Journal of Medical Science*, February, 1850. The major part of the section on Cancer of the Lung is taken from an essay on the subject in Vol. XXI. of the *Dublin Journal of Medical Sciences*, 1st Series; and the long chapter on Diseases of the Pleura is compounded of that in the first edition, with some trivial omissions, and of new matter gathered from Dr. Stokes' notes, and embodying his subsequent experience up to the year 1856.

Prefixed to this edition is a graceful and sympathetic memoir of Dr. Stokes by his attached friend, Dr. Acland, who aims at delineating Stokes as a man rather than to describe in detail his work as physician and author.

"The reprint of his work tells its own tale."

PART III.

HALF-YEARLY REPORTS.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.[a]

By Walter G. Smith, M.D., Dublin; F.K.Q.C.P.; King's Professor of Materia Medica, School of Physic, Trin. Coll. Dub.; Physician to Sir P. Dun's Hospital.

1. *Tamar Indien.*—We do not remember having heretofore met with an account of the exact composition of this favourite and undoubtedly active purgative, but, according to M. Schmitt, it is nothing but an electuary of senna made up into a tempting bonbon of complex formula:—

Tamarind pulp, - - -	450 parts.
Powdered sugar, - - -	40 „
Powdered sugar of milk -	60 „
Pure glycerin, - - -	50 „

M. Evaporate to consistence of soft extract. Add—

Powdered senna leaves, -	50 parts.
Powdered anise, - - -	10 „
Essence of lemon, - -	3 „
Tartaric acid, - - -	3 „

M. Divide into 100 boluses. Steam them, and roll in the following mixture:—

Cream of tartar, - - -	5 parts.
White sugar, - - }	āā 35 „
Sugar of milk - - }	
Tragacanth - - -	2 „
Tartaric acid - - -	2 „
Powdered red sandal - -	25 „

Dry and put up in tin foil.

—(*Répert. de Pharm.*, Juillet, 1883.)

[a] The author of this Report, desirous that no contribution to the subjects of Materia Medica and Therapeutics should remain unnoticed, will be glad to receive any publications which treat of them. If sent to the correspondents of the Journal they will be forwarded.

2. *Phenol, (Carbolic acid)*—(*a.*) *Detection and Estimation of.*—Mr. C. Thompson, in a recent address before the School of Pharmacy Students' Association, gives a convenient summary of our knowledge.—(*Pharm. Journ.*, 18th August.)

"I. *The Detection of Phenol.*

"There is not much difficulty in detecting the presence of phenol, or carbolic acid, as it is more generally termed. The principal methods in use for testing for phenol, are as follows:—

"1. *The Solubility Test.*—This consists in seeing whether any of the sample is soluble, either in water or in an alkaline solution.

"2. *Lex's Ammonia Test.*[a]—The liquid is mixed with a quarter volume of ammonia, a few drops of bleaching solution (1 to 20 water) added, then warmed, not heated to boiling; if phenol be present a blue coloration occurs; if the solution is very dilute, the colour will be green, becoming red on addition of sulphuric or hydrochloric acid.

"This is said to detect 1 in 3,000.

"3. *The Ferric Chloride Test.*—Put solution in a Nessler glass, add two or three drops of Fe_2Cl_6. A blue coloration is produced if phenol be present. The colour alters very rapidly. One part in 2,000 can be detected by this method.

"4. *Plugge's Reaction.*[b]—This depends on the action of $HgNO_3$ on a solution containing phenol. When such a solution is added to a solution of $HgNO_3$, it slowly reduces the mercury, evolves a smell of salicylol, and at the same time the solution acquires a deep red colour. The author of this process declares it to be a most delicate one, being able to detect 1 part phenol in 60,000 or even in 200,000 parts of water.

"5. *Pollacci's Test.*[c]—When a solution of phenol is oxidised by means of sulphuric acid and bichromate of potash, a brown coloration is produced, and if the solution be strong, a precipitate will be formed.

"6. *Landolt's Bromine Reaction.*—This test, which is described later on, in connexion with the estimation of phenol is the best and most certain means of detecting the presence of phenol.

[a] Ber. der deut. chem. Gesell. III. 457.
[b] Plugge, Fres. Zts. f. anal. Chem. XI. 173.
[c] Pollacci, Gaz. Chim. Ital. IV. 8.

"II. *Estimation of Phenol.*

"Until a comparatively recent date, phenol was estimated either by the 'solubility' test or by the 'ferric chloride,' but since the introduction, by Landolt, of bromine as a test for phenol, the two former have somewhat fallen into disuse, owing to the greater accuracy which can be obtained by the use of bromine.

"First, as regards the 'solubility' method. This may be worked either with water or an alkaline solution.

"The sample to be examined is shaken up with sufficient water or alkaline solution to dissolve it, were it all phenol, and the amount of oil undissolved is measured.

"With pure water there exists a difficulty, as the insoluble portion will partly rise to the top, partly sink to the bottom, and part again stick to the sides of the tube. This may be overcome by adding olive oil to the sample, which dissolves the impurities. Should not be added until after shaking up with water.

"Making the test with a solution of fixed alkali presents fewer difficulties, but as some of the impurities not phenol dissolve in the alkali, the results are generally too high.

"In either case the results are usually too high, as the crude phenol may hold a considerable quantity of water, which by this method is counted as phenol.

"The ferric chloride test is a colorimetric one. To apply it, make a solution, say of 10 grams to the litre, filter it to clear it, and then comparing the colour obtained in 10 c.c. of this solution by the addition of two or three drops of ferric chloride, with the colour obtained in a solution of phenol of known strength in the same amount of reagent. The difficulty is that solutions of crude samples often afford a very different colour from that obtained with pure phenol; moreover, the colour alters so very rapidly as to give great difficulty in making a satisfactory estimation.

"This method cannot be used with carbolates of lime or similar preparations.

"In 1871, Landolt (*Deut. chem. Ges. Ber.*, IV., 750–773), whilst testing for phenol in a well water, found that bromine water was a far more delicate test than any then known (1 in 43,700; Pollacci, 1 in 15,000). The addition of bromine water to a solution of phenol gives an immediate white precipitate of tribromphenol, $C_6H_2Br_3HO$.

"Landolt used this for the estimation of phenol by filtering and drying and weighing the precipitate. This is open to one great

objection, as pointed out by Koppeschaar, that since the tribromphenol melts at 91°, some of it is lost in drying at 100° C., so that it has to be dried over H_2SO_4, or else *in vacuo*, thus taking some time. Excess of Br must be added or else the precipitate redissolves in the solution of phenol.

"Weight of phenol present $= \frac{28 \cdot 4}{100}$ of the weight of $C_6H_2Br_3HO$.

"In 1876, Dr. Koppeschaar (*Zeitsch. Anal. Chem.*, 233–245) proposed a volumetric method for the estimation of phenol, based upon Landolt's reaction, which he says is uncertain. He gives two methods; in the first, he uses a standard solution of Br water, the strength of which is ascertained by the use of a solution of $Na_2S_2O_3$ of such strength that 1 c.c. $=$ 1 c.c. of a solution of KI (5 grams to the litre). Br water should be such that 50 c.c. after the addition of 5 c.c. of the KI solution require from 18 to 20 c.c. $Na_2S_2O_3$.

"Suppose a = number of c.c. used for this; 4 grams of the crude phenol are weighed up, dissolved in 1 litre of water; 25 c.c. of this are taken, put in a ½ litre flask filled with Br water up to the mark, well shaken, allowed to stand quarter of an hour, rinsed into a beaker containing 10 c.c. KI solution. Iodine set free, determined by $Na_2S_2O_3$ and starch solution.

"Let b = number of c.c. used, then percentage of phenol $= 0 \cdot 61753$ $(9 \cdot 5\ a - b)$; process only fairly accurate, variation of 2 per cent. in results.

"Bromine solution must be restandardised every day at least.

"In second process he uses a solution of a mixture, 5 parts bromide, 1 part bromate of potassium or sodium, preferably latter. The strength of his solution was such that 50 c.c. mixed with 10 c.c. KI solution after decomposition with HCl (5 c.c. diluted with 100 c.c. H_2O) required from 86 to 95 c.c. $Na_2S_2O_3$ solution.

"Let a = number of c.c.

"To conduct this process 25 c.c. of solution of phenol to be examined, and 100 c.c. of the solution of the mixture of NaBr and $NaBrO_3$ are run into a 250 c.c. bottle, 5 c.c. HCl added, well shaken, stand quarter of an hour, rinsed into a beaker after addition of 10 c.c. KI solution, and treated with $Na_2S_2O_3$ and starch solution.

"Let b = number of c.c. required. Then percentage of phenol $=$ $0 \cdot 61753\ (2\ a - b)$.

"Four results:—

"99·2.	99·3.
"99·5.	99·5

"Advantages over use of Br water, always having a standard solution at hand.

"Since Koppeschaar's process several modifications have been published, only a few of which have any merit—*e.g.*, Dr. Waller's, Giacosa's, and Seubert's.

"First, as regards Dr. Waller's[a] process. The originality here is in the addition of a solution of alum in dilute sulphuric acid to the solution.

"The following is his process:—

"Three solutions required.

"1. A solution of pure phenol, 1 per cent.

"2. A solution of Br, 30 c.c. = 10 c.c. phenol solution.

"3. Solution of alum in dilute H_2SO_4 crystals of alum shaken up with dilute sulphuric acid (100 c.c. to 1 litre water).

"*Process.*—Ten grams are dissolved in 1 litre of water, filtered through dry filter, and 10 c.c. taken; run into a six to eight ounce stoppered bottle, 30 c.c. alum solution added, and in a similar bottle are placed 10 c.c. standard phenol solution with 30 c.c. alum solution.

"Br water is now run in from a burette, the bottle being shaken after addition of a very few c.c. Towards the end precipitation is rather slow, but when the phenol is quite saturated a *very* slight excess of Br gives a decided yellow tint to solution. If precipitation does not readily separate, the addition of some of the precipitate from standard phenol will cause it to quickly separate.

"As the effect of Br on the homologues of phenol, such as creasol, phenol, &c., is most likely the same as on phenol; these, if present, will be reckoned as phenol.

"Aniline, toluidine, if present, should be removed by treatment with alkali, &c.; these will not be found in ordinary commercial carbolic acid, but usually are in dead oils.

"Giacosa's[b] process is very similar to Waller's, except that he does not use alum solution, and determines the point of saturation by means of a solution of KI in starch. He uses a 1 per cent. solution of phenol and a Br solution of same strength as Waller.

"Instead of adding the Br water to the phenol solution the order is reversed, the Br solution being placed in a beaker and the phenol poured in, stirring quickly all the time. As long as any excess of

[a] Chem. News. XIII. P. 150.
[b] Gaz. Chem. Ital. 1881. 541.

Br is present, the supernatant liquid will be yellow and turbid, but on adding the phenol solution drop by drop the point of saturation will be indicated by the solution becoming clear and colourless.

"Neither of these processes can be quite accurate, owing to the liability of loss of bromine, more especially in the Giacosa's method. Also there is the trouble of retitrating the Br solution every day.

"Waller says that the variation is not more than 0·1 to 0·2 c.c. on 10 c.c. of standard phenol solution.

"A method giving rather less trouble, inasmuch as it saves the labour of restandardising, is to use a solution of the mixture recommended by Koppeschaar. This was proposed by Seubert (*Chem. Soc. Jour.*, 1882, p. 106). He uses a solution KBr and $KBrO_3$, and phenol run in until a drop after filtration no longer gives any coloration to KI and starch paper. Necessary to filter because $C_6H_2Br_3HO$ has the power of liberating iodine.

"After working on these processes it struck me that as good a way as any was to make a standard solution of NaBr and $NaBrO_3$ (using a 1 per cent. solution of pure phenol to standardise it with) of such a strength that 100 c.c. on addition of 5 c.c. HCl saturate 10 c.c. of a 1 per cent. solution of pure phenol. The plan I have adopted is to weigh up 1 gram of substance, and dissolve in 100 c.c. H_2O; then place in an 8 ounce stoppered bottle, 100 c.c. of the standard solution of NaBr and $NaBrO_3$, and 10 c.c. of the sample treated as above, add 5 c.c. HCl, stopper, and shake it vigorously; allow it to stand quarter of an hour, then titrate back with a solution of pure phenol, 1 c.c. of which = 1 milligram."

(*b.*) *Cause of the Red Coloration of.*—Several theories have been put forward as to the determining cause of the red coloration of carbolic acid, but none of them has been accepted as quite satisfactory. The observation that the coloration commences in glass bottles in the acid nearest the glass, induced Herr Meyke to make a series of experiments which led him to the conclusion (*Pharm. Zeit. f. Russl.* XXII., 425) that it is due to the presence of lead dissolved from the glass-containing vessels. He has demonstrated that carbolic acid is capable of exercising a solvent action upon glass, and not only were lead and other constituents of glass found in a sample of carbolic acid that had become red, but the addition of silicate of lead to an acid that had remained white during eight or nine months was followed by a commencement of coloration on the third day. A qualitative analysis of the glass from two bottles

in which carbolic acid had become coloured, revealed the presence of lead, whilst that from two bottles in which acid had remained uncoloured for a long time showed none, though it contained copper, which has been alleged to be a cause of coloration. Herr Meyke found that in tinned vessels carbolic acid remains unaltered for a long time, and he recommends that they should be used for the purpose.—(*Pharm. Journ.*, 28th July.)

(*c.*) *To Mask the Odour of Iodoform.*—The following formula is given by C. Sherk (*Berliner klin. Wochenschrift*) as a great improvement over iodoform:—

℞. Iodoform,	- -	10 gr.
Acid. carbolic,	-	5 gr.
Ol. menth. pip.,	-	2 drops.

The acid is to be rubbed up with the iodoform, and the peppermint oil added subsequently. The disagreeable odour of the drug is completely covered, and it is not again developed even at an elevated temperature.—(*Med. and Surg. Rep.*)

3. *Chrysophanic Acid.*—The substance usually called chrysophanic acid, which has played a considerable *role* during the last few years as a local remedy in certain skin diseases, is more correctly called *chrysarobin.* It is a substance separated by certain solvents from goa powder, a substance found deposited in the wood of the trunk of *Andira araroba*, Aguiar. This commercial chrysarobin may be converted, by oxidising agents, into true chrysophanic acid, and it frequently contains traces of the latter body, but it should *not* be designated by the name "chrysophanic acid."

True chrysophanic acid was discovered in 1819 by Schrader, in a lichen, namely, *Parmelia parietina*, Ach. It was first prepared pure by Rochleder and Heldt in 1843, and was subsequently met with in another lichen—viz., *Squamaria elegans;* also in the roots of various species of Rheum, particularly the officinal rhubarb, and in the leaves of various species of Rumex and Cassia.

According to Kubly, rhubarb contains only a small quantity of the acid ready formed; a larger amount is obtained by treating rhubarb so as to split up the glucoside chrysophan.

It may be prepared in the following manner:—Powdered rhubarb is exhausted with very dilute alcohol containing some potash in solution, and the expressed and filtered liquid saturated with carbonic acid gas; the resulting precipitate is redissolved in 50 per cent. alcohol containing some potash, and, after filtration,

precipitated by acetic acid. The last precipitate is dissolved in boiling alcohol (strong), the solution filtered hot and then mixed with water. This causes the separation of chrysophanic acid in yellow flakes. It may be purified by repeated crystallisation from alcohol, or more completely, by precipitating the alcoholic solution with acetate of lead, depriving the filtrate of lead by means of sulphuric acid, and precipitating it by the addition of water. In this case it should also be further purified by recrystallising it several times from alcohol.

Warren de la Rue and Müller recommend exhaustion of powdered rhubarb, which has been soaked in cold water and again dried, with benzol, in a displacement apparatus. On distilling off the benzol from the percolate, the residue congeals, on cooling, to a crystalline magma, which is pressed and again dissolved in boiling benzol, while an accompanying reddish-yellow substance (emodin) remains partly undissolved, partly separates from the solution during the cooling. The filtrate is evaporated to the crystallising point, and the crystals purified by repeated crystallisation, first from benzol, then from glacial acetic acid or alcohol.

Concerning the *therapeutic* effects of chrysophanic acid, the statements are quite contradictory. According to Schlossberger (*Ann. Chem. and Pharm.*, 66, 83), the acid prepared from *Parmelia parietina* has no purgative action, and that prepared from rhubarb was found to be inert, even in doses of ½ gram, according to Buchheim. On the other hand, Schroff noticed, after a dose of ½ gram of the pure acid from *Parmelia*, eructations and slimy stools, which latter commenced about twenty-four hours after taking the dose, and continued to the fifth day, accompanied by want of appetite, oppression of the head, dizziness, and lassitude. Schlossberger denies the transition of the acid into the urine, and ascribes the yellow colour of the latter, after rhubarb has been taken, to phæoretin and erythroretin. Schroff and Buchheim, however, noticed yellowness of urine regularly after each administration of the acid, even up to the eighth day, and Meykow asserts that the rhubarb-resins colour the urine only if contaminated with chrysophanic acid. The purgative effect of rhubarb can evidently not be ascribed to the small quantity of chrysophanic acid present, and only in part to phæoretin (which purges only in larger doses).

All other therapeutic statements, which have appeared in late years, concerning chrysophanic acid, refer to chrysarobin from goa powder.—(*Ph. Jour., from New Remedies.*)

4. *Gelatin Preparations in Diseases of the Skin.*—In the *Med. and Surg. Reporter*, June 9, 1883, Dr. Schwarz reports some interesting practical remarks made to his class by Professor Pick, Professor of Dermatology and Syphilis in the University of Prague:— "Gentlemen,—A year ago I called your attention to a preparation called Chrysarobin gelatinon (Goa powder with gelatin), and recommended its use in psoriasis to you. The method of applying it is already known to you; the chrysarobin is prescribed in the quantity necessary, and is applied to the parts when in a fluid state by a brush. Jarisch, in referring to this mode of application and medicament, said the problem is solved and the beneficial effects of chrysarobin in psoriasis is established, and all evil effects are done away with. There are several points to be observed. The first is to obtain a method by which we can apply a medicament to a large surface at once, when necessary, for in many cases it is necessary. Formerly in such cases we were obliged to apply an ointment or plaster to one part alone. This required time and skill, for when an ointment was applied to one part, before the other part was finished the former was rubbed off; it was also necessary to bandage the entire body of the patient. This required time and skill, and annoyed the patient, and ointments always soil the underclothes, &c. By using the gelatin preparations, all these inconveniences are avoided. Following this plan of treatment, I have used oth gelatin preparations with advantage—pyrogallol (pyrogallic acid), naphthol (the active principle obtained from tar), iodoform, salicylic, and carbolic acids. I will now demonstrate practically to you a case in which I used pyrogallol for psoriasis."

"A. H., aged forty-two, male, strong build, was admitted to my clinic two months ago with his entire body covered with psoriasis, so that only small parts of the skin were free from the disease. Having used pyrogallol in many other cases, and having good results from it, I applied a ten per cent. mixture of pyrogallol and gelatin to this patient's body. The mode of applying is the same as with other preparations. The patient, after having been bathed in water, a heated solution of the pyrogallol gelatin is applied to the parts with a small brush. As soon as it becomes dry, a small quantity of glycerine is applied to the surface to prevent the coating from cracking or peeling off. This coating being transparent, allows you to see the progress of the treatment without removing it. This is easily seen in this case; in some places the skin is perfectly normal. The dressing was applied in the begin-

ning thrice weekly, and later twice weekly, with good results. These preparations can be applied by patients on themselves, and do not necessitate their being confined to a hospital or their home. It is a clean preparation, can be easily removed, does not soil the clothes, or prevent motion when applied over a joint; it is not expensive, does not crack or peel off. It is prepared in the following manner:—Dissolve 12½ ℥ of dry white gelatin in 25 ℥ of distilled water by a water bath, and while stirring add goa powder, pyrogallic acid, naphthol, iodoform, carbolic or salicylic acids, in whatever quantity necessary, allow it to cool, and the cake will take the form of the capsule in which it was prepared (a porcelain capsule is preferred). You can then direct the patient to take the necessary quantity, place it in a china saucer, apply heat to it, and when in a fluid state apply to the parts with a brush. I am positive that anyone resorting to this mode of treatment will never resort to the old manner of treating diseases of the skin by ointments, &c."

5. *Use of Sulphur in Acne.*—Dr. Stelwagon, of Philadelphia, contributes the following to the *Med. and Surg. Reporter*, June 16.

"Sulphur, as a local application in the treatment of acne has survived the deluge of new remedies; and although at times pushed momentarily to the background, it stands to-day the most reliable therapeutical agent for this affection. It has been employed in all of its various chemical preparations, and is so used at the present time. All are useful, and each has its advocates. Experience in their use, however, soon narrows the choice to a limited few. The most trustworthy of the preparations are the simple sulphur, either as the washed sulphur, precipitated sulphur, or flowers of sulphur, and sulphuret of potassium. There is very little difference in the varieties, so to speak, of plain sulphur, although preference is usually given to the precipitated. These two preparations, sulphur and the sulphuret of potassium, are not only the most valuable in their therapeutical effects, but also the cheapest—a small matter, it is true, yet of some importance. The plain sulphur may be used in various ways. In mild cases it may be employed simply as a toilet powder, and so used is frequently of advantage. As such, it should be dusted on the face at night by means of a powder brush and allowed to remain undisturbed until morning. The plan is easy to carry out, and for that reason commends itself. It is, as a rule, less efficient than lotions or ointments, inasmuch as it is less intimately brought in contact with the skin. In the form of a

lotion sulphur is often of great service. No better formula can be given than that containing a small amount of glycerine—ten minims to the ounce—and equal parts of alcohol and rose water. A combination, suggested by Dr. Bulkley, of a drachm of washed sulphur, a half fluid ounce of ether, and three and a half fluid ounces of alcohol makes an excellent application, and is especially indicated in those cases in which comedones are predominant, or in which there is a moderate degree of seborrhœa present. Kummerfield's lotion is another very useful combination:

℞.	Sulph. præcip., . . .	ʒ iv.
	Pulv. camphoræ, . .	gr. x.
	Pulv. tragacanth., . .	gr. xx.
	Aquæ calcis,	
	Aquæ rosæ, . . .	āā f. ℥ ij.—M.

"The proportion of sulphur in lotions should depend upon the effect produced, or to be produced; ten grains to a drachm or more to the ounce. A scruple to the ounce is a proportion most commonly used. Sulphur in ointment is another method in which this remedy may be advantageously employed. In the strength of one drachm to the ounce it is a very useful application. The percentage of sulphur in ointments is usually greater than in lotions, varying from twenty grains to the ounce up to equal parts.

"The sulphuret of potassium, the other sulphur preparation which stands high in the treatment of acne, is, I think, superior to the simple sulphur, although it is not in such general use. This may be due to the fact that sulphur itself has been always used and considered "good for skin diseases," while the employment of the sulphuret of potassium is more recent and the knowledge of its application less wide-spread. The sulphuretted odour of the drug is a disadvantage, but it admits of correction if desired; besides, even in its undisguised condition, the odour is merely concomitant with the application, as a few minutes afterward it is scarcely noticeable.

"It may be employed either as a lotion or as an ointment. The strength varies from five grains up to a half drachm to the ounce. The proportion which is most generally required is about fifteen grains to the ounce. The lotion may consist of a simple watery solution, or small quantities of alcohol and glycerine may be added at times with advantage; the former a half drachm to the ounce, and the latter about ten minims to the ounce. The efficacy of

such a lotion is in some instances increased by adding to it sulphate of zinc in the same proportion as the sulphuret of potassium.

"An ointment may be ordered instead of a lotion, and is, occasionally, of greater service. The lotion, however, is less tenacious of its odour, and, on the whole, is probably more efficacious.

"In the use of sulphur itself, preference is generally given to the ointment method; the sulphuret of potassium, on the contrary, is usually prescribed as a wash. In neither case is there any substantial reason for this, and it seems due merely to force of example or habit. It is a fact worth remembering that in some instances lotions prove of value where ointments had failed to benefit; the converse of this also holds true. Moreover, in some cases, sulphur itself may produce but little improvement, whereas marked advantage is found to follow a change to sulphuret of potassium, and *vice versâ*.

"The applications are best made at bed-time, as they are then less apt to be disturbed, and may remain on over night, and are, moreover, more comfortable and convenient for the patient.

"Before applying the preparation, the face should be sponged with hot water for several minutes. The ointment then, if that is used, should be well rubbed in, and not disturbed until morning, when the face may be washed. If the lotion is employed, it should be well shaken, and rubbed on with a sponge or rag for three or four minutes, and allowed to dry and remain undisturbed until the face is washed the next morning.

"It is well to intermit treatment every week for a few days in order that the furfuraceous desquamation which all such preparations are apt to produce, although slight and scarcely noticeable, may disappear. In this respect the ointments are far less objectionable, as the unguent, in a measure, prevents or conceals it.

"The above preparations or combinations used in the manner described are, as I have repeatedly seen, productive of great benefit in cases of this disease; and conjoined with appropriate constitutional treatment, and perseveringly used, are in a fair proportion of the cases curative."

6. *Characters of Nitro-Glycerine.*—In view of the continued and perhaps extended use of nitro-glycerine in therapeutics, it may be desirable to quote some observations which Dr. Matthew Hay has made on its physical characters, more precise than those given in previous publications:—"Nitro-glycerine is perfectly colourless,

and not of a clear yellow colour, as is stated in most of the papers on the chemistry of this body. The colour is due to the imperfect removal of the acid, or to the use of soda, which is commonly used for washing it, and which decomposes it, with the production of a reddish-brown colour. It has no odour when cold, but has a sharp pungent odour when heated. Its taste is sweet, and not unlike that of glycerine, but is more pungent. As regards its solubility—1 gram dissolves in about 800 cubic centimetres of water; with difficulty in 3 c.c. of absolute alcohol, easily in 4 c.c.; in 10·5 c.c. of rectified spirit (sp. gr. 0·846); in 1 c.c. of methylic alcohol (sp. gr. 0·814); in 4 c.c. of methylated spirit (sp. gr. 0·830); in 18 c.c. of amylic alcohol; in every proportion in ether; so also in chloroform, in glacial acetic acid, and in carbolic acid; in less than 1 c.c of benzol; in 120 c.c. of carbon bisulphide; and to a very limited extent, if at all, in glycerine. Its solutions in water and alcohol I have kept for nearly four months without their exhibiting the slightest evidence of decomposition; and I have no reason for believing that they will not remain undecomposed for a much longer time."—(*Pharm. Journ.*, July, 1883, from *The Practitioner.*)

7. *Liniment and Tincture of Iodine.*—When these preparations are made with methylated spirit they sometimes exhibit an extraordinary and unpleasant pungency. Some time ago Mr. Peter MacEwan, of Edinburgh, called attention to this fact, and showed by experiment that *pure* methyl alcohol does not develop this peculiarity. He attributed it to the presence of allyl alcohol in the crude wood spirit. In Canada, Mr. Gregory has noticed a similar occurrence, and relates his experience on the subject:—

"We have a market here for the tincture of iodine made according to the U.S.P., which is a simple solution of iodine in alcohol. It is used only for external application. Some time last summer my clerk suggested that it might be made from methylated alcohol, and, contrary to usual custom, I consented to make trial of half a gallon. After preparation it was carefully examined, and it seemed as if the odour of methyl alcohol was entirely covered by that of iodine, and in no other respect did it seem to differ from the same tincture made with ordinary alcohol. For a time all went well, but at the end of about a month a patient complained that he could not use it on his knee, because 'it burnt him and made his eyes smart when he was applying it.' This complaint was disregarded, but soon there were more of the same

kind, and we then concluded to withdraw it from general sale, and confine it to veterinary practice. Before this happened, however, a physician had got hold of some of the tincture, which he used in his gynæcological practice, causing to his patient a few minutes of intense suffering, and three or four days' confinement to a recumbent position, from the very great soreness produced by the application. I have just examined the last few ounces of this tincture, and on pouring out the liquid, the extremely pungent fumes filled the whole store, causing the eyes of both clerks and customers to water very freely. So pungent was it that although the day was cold and blustering, we were compelled to open all the doors and thoroughly ventilate the place.

"At first I was inclined to think that the formation of a small quantity of iodide of methyl might account for the great pungency developed, but soon abandoned that theory and had laid the matter over for further consideration and experiment. I am now convinced that Mr. MacEwan has struck the key-note when he suggests that allyl alcohol may be present, which unites with the iodine to form some iodo-allyl compound. In confirmation of this it may be stated that the odour of the tincture was decidedly 'garlicky,' and the effect upon the nose and eyes very similar to that of oil of mustard, but more powerful. Mr. MacEwan states that he prepared some iodine liniment, omitting the camphor, and found that the pungency was not produced, arguing from this experiment that the camphor had in some way influenced the development of pungency. It will be seen, however, that my experience establishes the fact that camphor has nothing to do with the reaction."

Referring to these observations Mr. W. Darling points out that allyl compounds will not be the only pungent compounds present in these preparations when made with methylated spirit, for the halogen substitution products of acetone, a body present in considerable quantity in crude wood spirit, are of an extremely irritating nature, much beyond the allyl compounds in this particular. Mr. Darling would ascribe the cause of the pungency to acetone rather than to allyl alcohol.—(*Pharm. Journ.*, June, July, 1883.)

8. *Cannabis Indica.*—Dr. Matthew Hay publishes a preliminary notice of a chemical investigation of this drug:—"Cannabis indica, or Indian hemp, is exceptional as a narcotic plant in respect of no alkaloid, possessing the action of the plant, having been as yet

separated from it. The so-called cannabin obtained by T. and H. Smith, of Edinburgh, many years ago, and said by them to possess the active and narcotic properties of the cannabis, is certainly not a pure principle, and is, probably, a mixture of resin with varying proportions of the narcotic principle. It possesses almost solely the characters of a resin, and is described by the Smiths as such; but were it the true active part of the plant, it is certainly far removed from all other narcotic principles, inasmuch as none of them is chemically related to the class of resins. One specimen of cannabin which I obtained some time ago from Merck, of Darmstadt, and which, I was given to understand, was prepared exactly according to Smith's process, possessed little or no narcotic action.

"A few years ago, Preobraschensky (*Pharm. Zeitsch. f. Russland*, 1876, p. 705) made a chemical examination of a quantity of haschisch which he brought with him from China, whither in 1873 he had accompanied an expedition, and was enabled, according to his own statement, to separate from it a volatile alkaloid, which he held to be identical with nicotine, and which he believed to be the active part of cannabis. This, in view of the distinctive and very different action of cannabis, was somewhat remarkable. It is highly probable, as has been suggested by Dragendorff and Marquiss (*Pharm. Zeitung*, 1877), that the haschisch used by Preobraschensky was mixed with tobacco, which it often is in Eastern countries.

"Recently Louis Siebold and Bradbury have reported to the British Pharmaceutical Conference (1881) that, after an elaborate investigation, they have arrived at the conclusion of Dragendorff and Marquiss, and that in the course of their investigation they made the interesting discovery that pure cannabis does actually contain a volatile alkaloid, which does not, however, possess the characters of nicotine. They separated it in very small quantity, obtaining not more than two grains from ten pounds of Indian hemp. They give to it the name of cannabinin. They record no observation as to its physiological action; and they, therefore, leave it doubtful as to whether this volatile alkaloid is the narcotic principle of cannabis.

"It is evident from these and many other researches that it is no easy task to arrive at correct conclusions as to the active principle of cannabis indica.

"A considerable time ago, I commenced a chemical examination of this drug, at the suggestion of Prof. Schmiedeberg, of Strassburg, the results, so far, of which lead me to believe that cannabis indica

contains several alkaloids. In a future communication I hope to be able to give an exact description of the distinctive characters and toxic action of each. In the meantime I shall content myself with the description of one which I have obtained in a considerable degree of purity, and one which, rather remarkably, possesses an action similar to that of strychnia. It is evidently, therefore, quite a secondary alkaloid of the cannabis, and reminds one of the thebaine of opium.

"This alkaloid was obtained from a watery infusion of powdered cannabis indica by treating it with a solution of subacetate of lead, and filtering. To the filtrate was added ammonia, and the preciptate removed by filtration. The filtrate, acidulated with sulphuric acid, was now treated with a solution of phospho-wolframic acid in order to precipitate the alkaloids present. The precipitate, which was fairly abundant, was, after the fluid had been removed by filtration and washing with dilute sulphuric acid and pressing, mixed with barium hydrate and water, which formed an insoluble wolframate and set free the alkaloids. The filtrate was now deprived of its excess of barium by means of a stream of carbonic acid gas and again filtered. The filtrate was at a gentle heat evaporated almost to dryness and acidulated with sulphuric acid and treated with absolute alcohol. The sulphate of the alkaloids thus formed was partially soluble in alcohol, partly not. It was from the soluble part that the alkaloid in question was procured. The sulphate was converted into a chloride by treatment with barium hydrate, afterwards with carbonic acid to remove excess of barium, and, finally, with hydrochloric acid to neutralisation. The chloride was evaporated and treated with absolute alcohol, in which it in part dissolved. From the solution, by addition of excess of carbonate of soda and frequent shaking with ether, an alkaloid was obtained in the form of colourless needle-like crystals.

"The alkaloid was easily soluble in water, soluble also in alcohol, and more slowly soluble in ether and chloroform. It caused tetanus in frogs in exactly the same manner as strychnia, increasing the excitability of the reflex centres of the spinal cord. It did not give a violet colour with sulphuric acid and bichromate of potash. It was, therefore, although similar in action to strychnia, not chemically identical with it. A solution of it in water was precipitated by the various alkaloidal precipitants, platinic chloride, iodide of potassium and mercury, phospho-tungstate of soda, phospho-molybdic acid, phospho-wolframic acid, &c.

"Although I obtained the alkaloid from 1 kilogram of cannabis, yet the quantity of it was so small that it was insufficient for an elementary analysis.

"To this alkaloid I propose to give the name of tetano-cannabin as indicative of its action."—(*Pharm. Journ*, *June* 2, 1883.)

In a later number of the *Pharm. Journ.*, Merck, replying in self-defence to Dr. Hay's remark, takes occasion to mention that he has in his price-current two entirely different preparations from cannabis indica—viz., firstly, cannabin, being the ordinary commercial resin from Indian hemp; and secondly, cannabin. tannic. (Merck):—

"The first cannabin mentioned, and described by Dr. Hay, is a resinous body which, from long custom, still goes under the name of cannabin, but the action of which, as I had long since discovered, is far from being certain or reliable. In consequence, I have made it the study of many years to isolate the active principle of the Indian hemp—a task in which I have, I flatter myself, after very considerable labour and trouble, succeeded.

"This is the cannabin. tannic. (Merck) referred to above, and which glucoside has nothing whatever in common with the ordinary resinous cannabin.

"A series of experiments, as to the effect of my cannabin. tannic. has been made, and I give here a few extracts from my report on 'New Remedies,' of February of this year, on the subject:—

"'*Cannabin. Tannic.* (*Merck*).—The preparation which I introduced under this name is a glucoside contained in Indian hemp, combined with tannin. Endeavours have been repeatedly made to discover and isolate, in a form suitable for medicine, the active principle of this plant, which has long been treasured for its medicinal properties. A cannabin has long been in vogue, which, however, under this name, was really little more than a very pure extract of cannabis indica.

"'After numerous experiments, involving much time and trouble, I succeeded in producing this new preparation, which in the very short time of its existence has gained for itself a considerable reputation.

"'As already mentioned, this cannabin is of a glucoside nature, and resembles, in its chemical comportment, solanin and allied preparations, in that it shows an alkaloid reaction. The combination with tannin has been chosen in order to give to the glucoside, which is of a nature very liable to decomposition, a handy and durable form.

" 'The action of cannabin. tannicum is narcotic—viz, soothing and soporific, without any bad after effects, as is often the case after the use of morphia and other opiates. With regard to its practical use, we have an article by Dr. Fronmüller in the *Memorabilien von Betz*, 1882, which says:—" The patients to whom this cannabin was administered were afflicted with almost every variety of disease, and were at the same time suffering to a high degree from nervous sleeplessness, for which they had nearly all taken opium or morphia without effect."

" 'The dose of cannabin. tannicum varies in different cases from 0·1–1·5 gram, but the most usual was 0·2–0·5 gram, administered, as a rule, at about half-past nine in the evening. Only in the case of very large doses, 1·0 or 1·5 gram (in the case of very delicate individuals, also, naturally, with smaller doses), were appearances of unconsciousness occasionally observed, which, however, quickly disappeared on the use of acetic ether.

" 'Most important is the fact, that neither were the digestive organs in any way affected, nor retarded motion of the bowels produced, as is generally the result from the use of other opiates.

" 'Dr. Hiller (Charité Berlin) also referred, at the January meeting of the " Verein f. i. Medicin," to my cannabin. tannic., and his observations agreed with those of Dr. Fronmüller. He described it as a mild and agreeable hypnotic, especially in cases where morphia cannot be administered on account of unfavourable after-effects of the latter drug on the patient. It also appears that the use of cannabin. tannic. will have a very large and important field in asylums for the insane.

" 'I am indebted to Dr. Karrer, of the *Kreisirrenanstalt Erlangen*, for various communications, according to which highly satisfactory results were obtained with my cannabin. tannic. in cases of excited and restless lunatics.

" 'In the interest of myself, and also of others, I deem it advisable to give publicity to the above, inasmuch as Dr. Hay does not seem to be acquainted with my cannabin. tannic., to which he does not in any way refer.' "

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

CLINICAL RECORDS.

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY. *A Series of Cases in Surgical Practice.* By LAMBERT H. ORMSBY, M.D., Univ. Dubl.; F.R.C.S.I.; Surgeon to the Hospital and to the Children's Hospital, Adelaide-road, Dublin.

FOR the notes of the following cases, illustrative of surgical practice in a metropolitan hospital, I am largely indebted to the surgical resident pupils and case-takers of the Meath Hospital. The first two cases are interesting as a contribution to the bibliography of lithotomy in childhood. Cases III. to V., inclusive, are examples of serious compound fractures. Case VI. is a brief record of the successful treatment by pressure of popliteal aneurism, and the last case is one of cancerous tumour of the leg, in which life was prolonged by circular amputation of the affected limb.

CASE I.—*Vesical Calculus ; Lateral Lithotomy ; Recovery.*

History.—John M'D., an anæmic and sickly child, four years of age, was admitted into the Meath Hospital, on October 8th, 1877, under my care. From the early age of eighteen months he presented many of the symptoms of stone in the bladder—viz., pain after micturition, dragging at the glans penis, and often sudden interruption in the flow of urine. When only two years old "lithotrity" was performed on him by me in this hospital. The operation was followed with marked relief of his most distressing symptoms and great improvement in health and strength. This happy state of things was unfortunately of brief duration, consequently for the past three months the child has been for the second time under my immediate supervision. His health being very delicate he was admitted into the Orthopædic Hospital, in Kevin-street, some twelve weeks ago, and it was sought to improve his constitution by nutritious diet. On several occasions the conclusive evidence of stone elicited from sounding—the characteristic click—was detected by myself as well as by Mr. (now Sir George) Porter, Surgeon to the

Queen. The child suffering very intensely, and all doubt as to the presence of a calculus being dispelled on the objective evidence of the sound, the operation of lithotomy was determined upon.

Accordingly I proceeded to operate on the morning of October 17, 1877, the lower bowel having previously been well cleaned out by an enema.

Operation.—The lateral operation was selected, a free perinæal incision was made, and the groove on the staff was exposed with little difficulty. The bladder was easily reached. There was little or no bleeding. The forceps was now introduced into the bladder along the finger, without a gorget being used, and a stone marked by a facet was extracted. The facet on the stone indicated the probability of the existence of another, which was at once detected by reintroducing the finger. This second stone was extracted with much facility. The operation, in every respect successful, was completed within four minutes.

October 17th.—After the operation the child was put to bed, and was ordered to be given four minims of tincture of opium immediately. The wound to be kept oiled four times in the day and water dressing to be applied. Urine escaped freely from the wound during the day.

18th.—Feverish; tongue dry, furred edges. Fresh milk and soda water ordered. Morning pulse, 140; temperature, 100·5°. Evening pulse, 148; temperature, 103·2°.

19th.—Slightly delirious during night; tongue continues furred and dry. Ordered the following mixture:—

℞. Tinct. aconiti, ♏ iv.
Spt. ætheris nit., ʒi.
Liq. ammon. acet., ʒii.
Aquæ, ad ℥ii.—M.
St. ʒss. every second hour.

Morning pulse, 126; temperature, 100·6°. Evening pulse stronger, 132; temperature, 102·2°. The tongue has become clean and moist. Wound healthy.

The boy improved steadily, and some water passed through the urethra naturally on the tenth day after the operation; and in four weeks from that day the perinæal wound was nearly entirely healed. Having some slight vesical irritation he was kept in the hospital long after the wound was healed, but was discharged quite well on the 8th of January, 1878, having been ninety-two days in the hospital.

CASE II.—*Vesical Calculus; Lateral Lithotomy; Recovery.*

History.—James F., of 49 Harold's-cross, aged five, admitted February 28, 1879. Began to complain two years ago, and was examined at St. Joseph's Hospital, and declared to have a calculus in his bladder. Since then he suffered pain at intervals, and his water never came freely.

Remarks.—The patient is a small child for his age, rickety, but fairly healthy-looking. He has two brothers, both healthy. None of his family ever suffered from stone, nor does the locality in which he resides appear to predispose to the disease. On Wednesday, March 10th, the operation of left lateral lithotomy was performed, and a stone about the length of an almond, but somewhat rounder, was removed from the bladder. The patient was then put to bed. His temperature that night was 101·2°, and it continued slightly above the normal height for the following two days. There was for four days considerable pain on micturition, but after that time it lessened very much. On March 19th the urine first began to flow through the natural passage, and on the 20th it ceased to flow through the wound. The patient speedily recovered, and the wound healed in three weeks after the operation.

CASE III.—*Compound Fracture of Vertex of the Skull; Recovery.*

History.—Anne F., aged eighteen, living in Wood-street, was brought to hospital on the afternoon of March 19. The policeman who brought her stated that she threw herself out of a third-story window on to the pavement. She was under the influence of drink at the time. There was a large wound over the right eye, about three inches long. On examination there was found a stellate depressed fracture of the frontal bone. The pupils were slightly dilated; pulse quick. She vomited freely (owing, I should say, to the amount of liquor consumed).

Treatment.—On visiting the patient, I brought the wound together by silver sutures, and ordered ol. crotonis ♏. i. on the tongue; in about two hours the oil had the desired effect. I visited her again that night; and (owing to the distended state of her bladder) I had to pass an instrument and draw off her water.

March 20.—Passed a good night; bowels moved twice; passing water naturally; pulse quick.

March 21.—Going on favourably; no bad symptoms.

The patient went on to a rapid recovery, and left hospital, April 6th, very well.

CASE IV.—*Compound Fracture of Patella; Recovery.*

History.—James B., aged thirty-four, float driver, was admitted into the Meath Hospital on October 23, 1876, under my care, suffering from a compound fracture of the left patella.

He was lowering a puncheon from a dray when he fell, the edge of the puncheon striking him on the left knee, cutting it open and fracturing the patella. When admitted, the fragments, when the leg was extended, were found to be about two inches apart, the wound corresponding to the upper border of the lower fragment, the upper fragment being drawn up by the quadriceps extensor muscle.

Treatment.—The wound was sealed up by a pad of lint soaked in blood. The leg was bandaged to a long posterior splint reaching from the fold of the nates to the foot, which was secured to a foot-piece. The shoulders and foot were raised by means of pillows. He was ordered an evaporating lotion.

October 28th.—He is going on favourably, and has had no bad symptom.

November 4th.—Splint removed and cleaned.

11th.—Splint removed and cleaned, on account of the scalding caused by the lotion.

21st.—Dressing came away from the wound, showing it to be completely healed without the formation of any suppuration.

30th.—Splint removed and cleaned.

December 17th.—Long posterior splint removed, but raised by pillows.

26th.—The knee was bandaged, and he was allowed to get up on crutches.

January 20th.—He is able to walk some distance without the help of his crutches. He left hospital to-day, and has gone to the Convalescent Home.

During the whole progress of the case there was not a single bad symptom.

Case V.—*Compound Fracture of Femur; Recovery.*

History.—P. K., aged forty-four, labourer, was admitted into the Meath Hospital July 4, 1879. Whilst driving a loaded cart on foot he was struck in the heel by the fore-shoe of the horse and knocked down. The wheel of the loaded vehicle passed over his thigh, and the passers-by heard an audible snap. He was conveyed to hospital, and admitted under my care. I at once set the fracture, and closed the external wound by means of a piece of lint in the form of a compress, steeped in the compound tincture of benzoin.

Progress.—During the following two or three days he felt feverish, and was slightly delirious at night. With this exception, he progressed very favourably since date of accident. No untoward result impeded the process of repair in the fracture.

Treatment.—The treatment consisted in absolute rest for six weeks, aided by the application of Liston's long splint. The wound leading down to seat of injury was hermetically sealed by a piece of lint saturated in tinct. benzoini co., as originally suggested by Sir Astley Cooper. His bowels being at first confined, he was given two ounces of mist. sennæ co., which at once relieved any slight feverish symptoms present.

Convalescence.—On August 15 he was pronounced convalescent, and the external wound was scarcely visible on careful examination, and healed without the formation of any suppuration.

CASE VI.—*Popliteal Aneurism treated by Pressure (Dublin mode); Recovery.*

History.—Edward S., aged forty-nine, admitted February 20, 1880. The patient had served fourteen years in the army, four as canteen sergeant while in India. He consequently passed a great deal of his time standing. At the time of admittance he was a warder in the Military Prison. He had always been healthy, with the exception of a mild attack of intermittent fever in India. Was a temperate man, and never had venereal. Last November he strained the back of his left knee in lifting a heavy block of timber. Subsequently the limb appeared to be not so active as formerly; but he noticed no swelling until January 31st. From that time the tumour grew until it attained the size of a turkey egg. He suffered very little pain, except when standing. The temporal arteries are atheromatous. On admission he was ordered the following mixture:—

℞. Extract. ergot. liq. ʒiii.
Acidi gallici ʒiss.
Spt. chloroformi ʒii.
Aquæ ad. ℥viii.—M.
℥i. ter in die.

On the 23rd, at 10 a.m., the radical cure was begun, by the application of Read's tourniquet over the femoral at the groin, and Signoroni's at the apex of Scarpa's triangle, the limb being previously swathed with flannel. By this pressure pulsation ceased in the tumour. The patient was carefully watched by Messrs. Miller and Roe, and when complaining of much pain liq. morphiæ was administered. The limb felt very numb for a few hours, but gradually the numbness diminished.

Remarks.—Perfect quiet was observed all day. At 10 30 that night the tourniquets were removed, and the tumour was found to be quite consolidated. The patient was kept in bed, and given moderate non-stimulating diet until March 10th; he was discharged on the 13th, the tumour never having shown signs of returning pulsation. In this case it will be remarked the pressure was only applied for eleven hours and a half.

CASE VII.—*Cancerous Tumour of Leg; Circular Amputation.*

History.—Bridget L., aged sixty-two, was admitted to the Meath Hospital on December 8, 1879, suffering from a malignant growth on the posterior aspect of the leg. She was recommended for admission by Dr. Hornidge, of Tyrrellspass, Co. Westmeath. She was placed under my care, and on consultation it was decided to perform a circular amputation of the leg just below the knee. She was operated on (non-antiseptically). After the operation she was removed to a small ward, and watched carefully for "intermediate hæmorrhage." None, however,

occurred. All went on well for the first week; after that she complained of pain on the outside of the thigh, and the stump commenced to discharge a great quantity of pus, and the wound refused to heal at its outer edge.

Treatment.—I now began to syringe out the wound with carbolic acid (1 in 40) and put on a compress over the knee to try and bring the walls of the abscess together and prevent the accumulation of pus. Things went on in this way for some time, and three weeks after the operation, the swelling above the knee being very tense and painful, I made an incision and gave vent to a large quantity of pus. The case progressed very well for a few days, when another formation of pus took place, which was opened. After this the wound took on a healthy action and began to heal. During all this time her appetite was fairly good, and her temperature was never over 101°. She was discharged from hospital on March 23, 1880, one hundred and seven days after operation, cured, with the stump entirely healed.

A letter was subsequently received from Dr. Hornidge to say that the cancerous disease returned on September 1st, 1880, in the upper part of the thigh, and she died on November 1st of the same year.

THE INFLUENCE OF CALOMEL ON FERMENTATION AND ON BACTERIA.

DR. WASSILJEFF (*Jeschner klin. Gaz.*) has studied experimentally, in Hoppe-Seyler's laboratory, the influence of calomel on fermentation and bacteria. He found that the presence of one part of calomel in from twenty to one hundred parts of fibrin or fat, did not interfere with the action of the unorganised ferments of the saliva, gastric juice, and pancreatic juice; but the calomel did prevent the formation of certain decomposition products, as indol, phenol, skatol, creasote, and hydrogen sulphide. The calomel also prevented butyric acid fermentation. The action of calomel upon bacteria and micrococci was next studied, according to the Buchholtz-Wernick method. It was ascertained that the drug destroyed these organisms and prevented the appearance of new ones. From this it seems that calomel destroys organised ferments, but is without effect upon the unorganised ones. So far, all the experiments had been outside the body. Now, experiments were made on three dogs. They were given one grain of calomel each, and after some hours were killed. The intestines were ligated in the upper part of the duodenum and in the lower part of the colon, and the entire contents were carefully examined. In no case could the putrefactive products, indol, skatol, hydrogen sulphide, &c., be detected. It would seem from this that much of the good which calomel is known to accomplish in various intestinal troubles is due to its aseptic properties.—*The Physician and Surgeon.*

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P., F.M.S.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, September 8, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa		From all causes	From seven Zymotics
Dublin, -	349,685	740	630	152	113	–	4	9	1	17	15	41	89	23·3	3·3
Belfast, -	214,022	479	340	77	43	4	-	41	-	12	9	22	49	20·7	5·4
Cork, -	80,124	168	124	14	34	–	–	–	–	–	6	3	13	20·2	1·4
Limerick, -	38,562	97	77	15	16	–	1	–	–	1	–	3	11	26·0	1·7
Derry, -	29,162	58	52	5	12	–	1	6	–	–	-	1	7	23·2	3·6
Waterford,	22,457	46	46	6	9	–	–	-	–	–	1	4	8	26·6	2·9
Galway, -	15,471	29	16	3	3	–	–	–	–	–	1	–	1	13·5	0·9
Newry, -	14,808	21	13	2	3	–	1	–	-	-	-	-	2	12·3	0·9

Remarks.

In some instances the general mortality, and in all instances the death-rate from the principal zymotic diseases show an increase. The death-rate from all causes ranged between 26·6 per 1,000 of the population annually in Waterford and 12·3 in Newry; that from seven zymotics was as high as 5·4 in Belfast, but only 0·9 in Galway and Newry. The registered deaths represent a rate of mortality of 21·7 per 1,000 per annum in the sixteen chief town districts of Ireland, 19·8 in twenty-eight large English towns (including London, in which it was only 17·6), 17·5 in Edinburgh, and 24·3 in Glasgow. If the deaths of persons admitted into public institutions from localities outside the district (14 in number) are omitted, the death-rate of the Dublin registration district becomes 22·9 per 1,000 annually, while that of the city proper (within the municipal boundary) appears as 24·3.

Acute febrile zymotics were more prevalent and fatal than in the preceding four weeks. The deaths from the seven principal maladies

included in this class were 88 in Belfast, representing a rate of 5·4 per 1,000 per annum. They included no fewer than 41 from scarlet fever, 22 from diarrhœal diseases, 12 from whooping-cough, 9 from continued fevers, and 4 from smallpox. In Dublin 87 deaths were referred to the seven diseases included in the table, including 41 from diarrhœal affections, 17 from whooping-cough, 15 from continued fevers, 9 from scarlet fever, 4 from measles, and 1 from diphtheria. The total deaths from zymotics were 106, or exactly double the number (53) registered in the preceding four weeks; notwithstanding, the mortality fell considerably short of the average of the previous ten years (134·1 deaths). Of the 17 victims of whooping-cough, 16 were children under 5 years old, of whom 11 had not lived twelve months. Of the 15 deaths attributed to "fever," 7 were ascribed to typhus, 6 to typhoid, and 2 to fever of ill-defined type. There was a notable increase in the fatality of diarrhœal affections in the eight selected Irish towns. The deaths were 74 against 36 in the previous four weeks. This untoward result was due mainly to the dry, comparatively warm weather of the second half of August. At the same time, it is a remarkable fact that in London—notwithstanding a mean temperature of 60·9°, or 2·5° above that of the four weeks ending August 11—the deaths from diarrhœal affections declined from 867 in that period to 343; the weekly distribution of deaths was 119, 63, 74, and 87.

In the Dublin registration district, 740 births and 630 deaths were recorded. The births of 358 boys and of 382 girls were registered. The deaths of children under one year old increased from 86 to 152, whereas those of persons aged 60 years and upwards decreased from 131 to 113. The mortality among infants was largely due to zymotics. It has been already stated that 11 children under one year old were killed by whooping-cough. Besides these, 27 infants fell victims to diarrhœa.

Pulmonary consumption was returned as the cause of deaths in 180 instances in the eight principal towns. The deaths in Dublin were 89, while those from all other affections of the organs of respiration were only 62, compared with a ten-years' average of 74·9. These deaths included 41 from bronchitis (average = 46·3), and 13 from pneumonia (average = 14·1).

On Saturday, September 8, the number of cases of the undermentioned epidemic diseases under treatment in the principal Dublin hospitals were—smallpox, 0; measles, 0; scarlet fever, 27; typhus, 33; typhoid fever, 2; pneumonia, 5.

The mean temperature of the period under discussion was 57·7° in Dublin, 56·5° in Belfast, 57·3° at Cork, 60·9° at Greenwich, and 56·8° in Glasgow. These values are slightly below the average, but show a marked increase of warmth as compared with the preceding four weeks.

METEOROLOGY.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of August*, 1883.

Mean Height of Barometer, - - -	29·974 inches.
Maximal Height of Barometer (at 9 a.m. of 23rd), -	30·335 „
Minimal Height of Barometer (at 9 p.m. of 14th),	29·433 „
Mean Dry-bulb Temperature, - - -	58·6°.
Mean Wet-bulb Temperature, - - -	55·6°.
Mean Dew-point Temperature, - - -	53·0°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·402 inch.
Mean Humidity, - - - - - -	81·7 per cent.
Highest Temperature in Shade (on 26th), - -	71·4°.
Lowest Temperature in Shade (on 12th), - -	48·0°.
Lowest Temperature on Grass (Radiation) (on 12th)	42·4°.
Mean Amount of Cloud, - - - - -	58·4 per cent.
Rainfall (on 14 days), - - - -	3·307 inches.
Greatest Daily Rainfall (on 6th), - - -	1·037 inches.
General Directions of Wind, - - -	W., S.W.

Remarks.

The first half of the month was unsettled, with heavy rains and high winds. After the 14th there was a decided and permanent improvement, and the second half of the month was dry, comparatively bright, and warm. The mean temperature (58·6°) was as nearly as possible equal to the average temperature of August in Dublin during the eighteen years, 1865–1882, inclusive. The rainfall (3·307 inches) was in excess of the average (2·969 inches), but the rainy days were only 14 compared with an average of 16·1.

During the first three days an area of high atmospherical pressure lay over France and the southern portion of the British Islands, and the weather was chiefly fine. On the 4th an extensive but shallow depression appeared in the extreme N.W., causing heavy falls of rain in Ireland at night and on the following day. On the 6th a shallow thunderstorm depression crossed Ireland from W.N.W. to E.S.E., and in the afternoon thunderstorms of exceptional violence occurred locally in Dublin and its vicinity. A few light showers fell in the early part of the day, and were followed by a fair interval. After 4 p.m. lofty cumuli and nimbi became massed in the sky to W. and N.W. of Dublin. A thunderstorm subsequently came up against the wind, which continued light from E.S.E. Vivid flashes of lightning were quickly followed by loud peals of thunder, and rain fell in torrents between 5 and 6 p.m. As the storm rolled away to the eastward a rainbow was seen. After 7 p.m. another storm approached from W.N.W. There were several flashes of lightning

of dazzling brilliancy, accompanied with deafening thunder and a deluge of rain. Altogether within two hours more than an inch (1·037 inches) of rain fell in Dublin. Late at night much sheet lightning was seen as the storm rolled away to the eastward. The 7th was a fine day; but the barometer fell rapidly towards night as a deep atmospherical depression approached from the south-westward; the wind freshened, and rain prevailed for several hours. Wednesday, the 8th, was changeable, showery, and squally. In the course of the night a new and very deep depression advanced from the westward towards Scotland. Its centre reached the Hebrides on the following morning, when the barometer read 28·74 inches at Stornoway. Very steep gradients for W. and N.W. winds existed, so that moderate or fresh gales from those quarters were reported from many British and Irish stations. The weather was generally wild and unsettled until the 11th, when it suddenly became fine and bright. But this improvement was only temporary, for at night a depression approached Ireland from S.S.W., resulting in a downpour of rain, which lasted for 36 hours, and gradually extended north-westwards, visiting the N. of England and Scotland on the 13th. In the 24 hours ending 8 a.m. of this day, the rainfall in the S. and S.W. of Ireland exceeded an inch and three-quarters, more than an inch and a half was registered at Donaghadee, more than an inch at Mullaghmore and Parsonstown, and ·680 inch in Dublin City. At this time the weather was bright and very warm in the S. and S.E. of England. After the heavy rainfall of the 12th and 13th, the wind drew into N.W. with improving weather. Monday, the 20th, was unsettled, but afterwards quiet, beautiful weather prevailed for several days. Much bright sunshine was enjoyed, and there was a marked increase of warmth by day, with heavy dews by night. This settled weather was connected with the presence of an anticyclone, the centre of which lay over Ireland and England until the 25th, when the barometer fell, and cirrus cloud showed in the sky. The last week of the month, although less settled, was in most respects favourable, and only a few showers fell. After the 14th only ·066 inch of rain fell on four days; whereas ten out of the first fourteen days were rainy—the registered rainfall amounting to 3·241 inches.

Except in the violent thunderstorm of the 6th, there were no electrical disturbances in Dublin; on the 9th, however, forked lightning was seen over the sea at Ballybrack, Co. Dublin. A lunar halo was seen on the 18th. The air was foggy on the evening of the 16th.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

THE TREATMENT OF LUPUS.

The following notes are condensed from the *Edinburgh Med. Jour.* for August:—G. H. Fox (*Phil. Med. News*) recommends scraping with the curette, followed by the application of some caustic. When the patch is not of long standing and is superficial, he favours the application of iodoform. It is painless, and, while it tends to destroy the lupous cells, it promotes the speedy healing of the ulceration. On the other hand, when the growth is of long standing and the nodules are deeply seated in the corium, the use of a cone of nitrate of silver is, he thinks, the best adjuvant to the curette. This should be pressed firmly into the little pits left after the removal of the nodules. On the nose alone the treatment by linear scarification is better than that by the curette and caustics subsequently. He has found the curette of comparatively little value in the treatment of lupus erythematosus. Of late he has applied flexible collodion containing 20 per cent. of chrysarobin, with the effect of leaving the patch in a smoother and far more healthy condition. If such mild measures are unavailing, and a cauterising agent is called for, the ethylate of sodium is to be preferred. This blisters the skin, produces a superficial eschar, and, by a peculiar action on the blood-vessels, leaves a very slight cicatrix. Aubert (*Ann. de Derm. et de Syph.*) holds that scraping to be effectual must be performed with energy; and the rule in lupus is to scrape so long as any particle of tissue comes away. All the embryonal tissue can be easily detached, but the felt-work of the healthy material presents an almost unconquerable resistance. When the thin slough which results has been thrown off, the process of cauterisation proceeds from the periphery to the centre, and during this it is advisable to treat and to modify the surface with some suitable application. A ten per cent. pyrogallic acid ointment is efficacious in checking exuberance of the granulations and in leading to the formation of a good cicatrix. To destroy the diseased points remaining in the sound tissues after scraping, it is well to practise, after an energetic erasion, linear scarification of the base and margins. This combined method of scraping, followed by scarifications, is particularly applicable to lupus erythematosus. Scarification by long incisions was introduced by Balmanno Squire, but it is to Vidal that we owe the only truly effectual method, that of *closely set and crossed linear scarifications.* The best instrument for scarifications is the needle with narrow blade and

double cutting edge used by Vidal. The rule is to score finely the tissues by incisions closely approximated and parallel to each other, crossed by other incisions perpendicular or a little oblique to the first, like the lines of an engraving. The incisions need not be perpendicular to the plane of the region operated on; indeed, when oblique, the vessels are more thoroughly divided. But the obliquity of all the incisions taking the same direction must be similar, otherwise fine slices would be cut from the tissues. In depth they should only in special circumstances extend below the deep portion of the derma. It is the preservation of all the useful elements which constitutes the practical value of scarification. We obtain the minimum of cicatrix and of destruction. Since the epidermis has been preserved on all points of the surface, we obtain in three or four days complete cicatrisation of the areas which have been scarified. The rapidity of the growth is proportioned to the healthy condition of the epidermis.

THE INTERNAL USE OF GLYCERINE.

In a recent *thèse de Paris*, M. Tisne (*Journal de Thérapeutique*, April 25) gives an account of the results of the employment of glycerine by Drs. Jaccoud and Ferrand. The former prescribes it as a stimulant to the digestive organs in the non-febrile stage of phthisis, when for any reason cod-liver oil ceases to be tolerated. The following mixture is given daily in two or three doses:—Glycerine, forty grammes, and rum or cognac ten grammes, with one drop of essence of mint. This aromatic alcoholised compound, of agreeable flavour, is well tolerated by the stomach, and even after long uninterrupted use it causes neither satiety nor disgust. The addition of the rum or brandy has simply in view the modification of the insipid taste of the glycerine, and to assist its digestion. The amount of the glycerine may be raised to fifty or sixty grammes, but only in persons who do not exhibit any signs of abnormal excitability of the heart or nervous system; and restlessness, unusual loquacity, obstinate insomnia, or an increase of temperature announce that the proper dose has been exceeded. Dr. Ferrand makes daily use of glycerine in his wards at the Laennec, and it is found to be readily absorbed without producing any toxic effects. It diminishes constipation in almost all cases, and yet moderates diarrhœa when it is present; and under its use sleep becomes calmer. It has an evident effect on nutrition, its employment in most cases leading to an increase in weight after the first fortnight. In tuberculous cases it induces a considerable amendment in the functional manifestations of the disease, such as dyspnœa, cough, and sweating. The expectoration is the symptom which is least influenced. The local condition of the lung also remains stationary, and the physical signs undergo no change. The action of glycerine on the liver is exhibited by the increase of its size and by the more abundant

flow of bile. With respect to its action on the kidneys, there are observed a more abundant diuresis, and an absolute and relative increase of the urea, chlorides, and phosphates eliminated by the urine. In affections of the genito-urinary organs, M. Tisne has found that under the use of glycerine the alkalescence of the urine seems to diminish, while purulence, when present, becomes considerably lessened.—*Med. Times and Gazette*, and *Practitioner*, August, 1883.

CARDIAC REMEDIES.

THE following table, on the action of various drugs on the cardiac apparatus, is from the second edition of Professor G. Sèe's work, "Diagnostic et Traitement des Maladies du Cœur":—

Parts acted on	Excitors	Paralysers
Cardiac muscle.	Digitalin. Iodal (small doses). Camphor. Caffein.	Digitalin (second effect), emetin. Copper, Barium, and potassium salts. Chloral (in large doses), scillain.
Cardiac motor centres.		Saponin (last effect). Iodal (in large doses).
Cardiac inhibitory centres.	Muscarin.	Atropia. Fabarin. Spartein (large doses). Pilocarpin (secondary effect).
Intra-cardiac plexus of inhibitory fibres of vagus.	Nicotin, Pilocarpin, } first effect. Calabar bean.	Pilocarpin (secondary effect).
Trunk of vagus.	Aconitin. Nepalin.	Spartein. Nepalin (second phase).
Plexus of accelerating fibres of sympathetic.	Apomorphin.	Spartein.
Inhibitory centres of medulla.	Digitalin.	Chloral. Croton Chloral.
Vasomotor centre.	Bromide of potassium.	Prussic acid.

—*The Physician and Surgeon.*

EXTIRPATION OF THE SPLEEN.

DR. ALBERT BLUM contributes a paper on this subject to the *Archives Gén. de Méd.* for June. He gives a brief detail of seventeen cases of splenotomy consecutive to wounds of the organ, and remarks that in all these instances recovery followed; and that no unfavourable symptoms that could be attributed to the loss of a more or less considerable portion of the viscus was observed. In splenotomy performed in cases of tumour of the organ the result was very different. Dr. Blum reproduces Credé's table of thirty cases of extirpation of the spleen, with the addition of the weight of the organ upon its removal; and, when possible,

the time elapsing in the fatal cases between the operation and death. In six out of these thirty cases the operation was successful. Two of these were cases of cystic disease, and four cases of hypertrophy. Extirpation of a leukæmic spleen was fatal in all cases. The author's conclusions are that:—When in consequence of a wound in the region of the spleen there is a hernia of it, the surgeon would be justified in removing the portion prolapsed. All the observations relating to cases of this kind indicate the harmlessness of the operation, and its termination in recovery. In diseases of the spleen, extirpation is contra-indicated in cases of cancer, or of hypertrophy, symptomatic either of an hepatic affection or of paludal intoxication. The results of surgical intervention in such cases have been deplorable. Cysts of the spleen are curable by much easier or less dangerous means than extirpation. In cases of movable spleen the operation may be indicated if the symptoms are serious. In fine, at the present day, it may be affirmed that splenotomy is practicable in the human subject without altering the condition of health. The operation is only very exceptionally indicated; it is difficult to conduct to a favourable termination, and there are great chances of its terminating rapidly in death, due to hæmorrhage or to traumatic shock.

LOCAL TREATMENT OF DIPHTHERIA.

S. KORACH (*Deutsche med. Wochensch.*) records the results of his treatment of one hundred and twelve cases by iodoform, and asserts that this is infinitely the best local application for diphtheritic patches. He used the following solution, painted on six times daily:—Iodoform, 2·5 grammes; ether, 25 grammes; balsam of tolu, 5 grammes.—*Edinburgh Medical Journal.*

SUBCUTANEOUS OSTEOTOMY IN COXALGIA.

IN a paper in the July number of *The American Journal of the Medical Sciences*, Dr. H. R. Wharton records eight cases of coxalgia followed by marked deformity, in which eleven subcutaneous osteotomies of the femur were performed. The results obtained were most satisfactory, not only as regards the immunity from danger in the operation, but also as regards the correction of the deformities and restoration to use of comparatively useless limbs. The amount of constitutional disturbance following the operations was insignificant, as little, or even less, than that which follows a simple fracture of the femur; in no case was there excessive hæmorrhage at the time of operation, nor did there follow in any case marked febrile reaction or suppuration; the wounds healed as ordinary tenotomy wounds, and by the end of the first week were generally found entirely closed, so that further dressings could be dispensed with. The facility with which the wounds healed in these cases can only be explained by their subcutaneous character; for, although by the operation

a compound fracture of the femur is produced, it must be remembered that the original puncture, which is made down to the bone by Mr. Adams's knife, is small, and that when the saw is introduced and cuts the bone, the wound is entirely filled by its shank, by blood, and by dust from the sawn bone, so preventing the admission of air to the deeper parts. The results of reported cases bear strong testimony to the general safety of the operation, and there is no doubt that the selection of proper cases, and care as to the position at which the section of the bone is made, will render this operation one of the safest in surgery. The paper concludes with a full and careful discussion of the various details of the operation.

LOCAL APPLICATION IN ACUTE RHEUMATISM.

Oil of Wintergreen (salicylate of methyl), diluted with an equal quantity of olive oil or soap liniment, applied externally to the joints affected by acute rheumatism, gives prompt relief, and, from its pleasant odour, is very agreeable to use.—*Therapeutic Review*, and *Ed. Med. Jour.*

ARREST OF HÆMORRHAGE FROM AN INTERCOSTAL ARTERY.

In a case of this kind from homicidal stabbing, Dr. Levis, of the Pennsylvania Hospital, arrested the flow immediately by making pressure within the pleural cavity, directly on the vessel, by introducing into the wound the handle of a door-key. The key was then turned transversely, so as to make direct pressure, and maintained in that position for some hours, until there was no more tendency to hæmorrhage. The same mechanical action might be effected by the similar use of the handle of an ordinary gimlet.—*Polyclinic*, Aug. 15.

EXPERIMENTAL KERATITIS, ITS BEARING UPON STRICKER'S THEORY OF INFLAMMATION.

Dr. J. L. Minor, of New York, in a brief paper in the July issue of *The American Journal of the Medical Sciences*, claims the establishment of the immigration theory; because the pus cells are similar in appearance to the white blood-corpuscles; they can be traced from the corneal periphery to the point of irritation; and having also gained access to the corneal tissue through the eschar, they are most abundant immediately around this centre, where we can still recognise dead, but intact, corneal corpuscles. The corneal corpuscles show signs of proliferation some time after the cell immigration has set in; and this proliferation gives rise, not to pus cells, but to new corneal corpuscles, and they are strictly limited to the zone surrounding the dead corneal corpuscles; whereas leucocytes, or pus cells, in abundance, can be found in various parts of the cornea, at a distance from this point.

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MEDICAL SCIENCE.

NOVEMBER 1, 1883.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XII.—*Contributions to the Operative Surgery of the Jaws, Tongue, and Palate.* By WILLIAM STOKES, F.R.C.S.; Ch.M. Univ. Dubl.; Professor of Surgery, Royal College of Surgeons; Surgeon to the Richmond Surgical Hospital; late President of the Pathological Society of Ireland; President-Elect of the Irish Graduates' Association; Member of Council of the Association for the Advancement of Medicine by Research, London; Fellow of the Medico-Chirurgical Society of London; Member of the Clinical Society, London; Member of the Royal Irish Academy; Consulting Surgeon to the Dental Hospital of Ireland; Consulting Surgeon to the National Orthopædic and Children's Hospital; Secretary to the Surgical Section of the Academy of Medicine in Ireland; Corresponding Member of the Hufeland Medico-Chirurgical Society of Berlin; &c., &c.

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X. CANCER OF LOWER JAW; EXCISION OF TUMOUR.

XI. EXTENSIVE EPITHELIAL CANCER OF TONGUE, FLOOR OF MOUTH, AND LOWER JAW; EXCISION OF TONGUE, TWO ENLARGED SUBMAXILLARY GLANDS, PORTION OF FLOOR OF MOUTH AND LOWER JAW.

SURGICAL operations on the Jaws, Tongue, and Palate possess elements of interest and importance, theoretic as well as practical, hardly if at all inferior to those performed on any other region of the body. I deem this equally true whether such procedures be undertaken on account of any of the diseases, injuries, or congenital malformations met with in the above-mentioned situations. I propose, however, in the following clinical records, to confine myself to the first group of the conditions above alluded to—namely, the diseases—and reserve for possible consideration in the future, the discussion of some of the injuries and congenital malformations of the jaws and neighbouring parts requiring operative aid.

The practical lessons to be derived from the study of the records may here be epitomised. Of these I would first mention the necessity, in the great majority of cases, of not holding out hopes of permanent relief when the removal of the disease—whether effected by excision, ligature, or cautery—is undertaken for any form of malignant disease. It is, no doubt, disheartening to be obliged to make such a statement; but I feel convinced there would not be such grounds for it, if surgeons recognised the primarily local nature of cancer, and the necessity for not waiting until the barriers separating the benign from the malignant were passed. At the same time, illustration is afforded in these cases

that in maxillary and lingual carcinoma, even when coexisting with glandular contamination, a careful and free removal of the disease is, as a rule, attended with relief from pain, fœtid discharge, mental anxiety, and promotes thereby the comfort of the patient, and the chance of prolongation of life. With the view of obtaining immunity from recurrence of disease after operations for bone cancer and other forms of malignant growths, two doctrines have been held—one, the necessity for amputating at the joint above the seat of disease; and the other—on which my late colleague, Professor R. Adams, used to be very emphatic—the desirability of having, when possible, a healthy joint between the disease and the seat of the operation. If, in the case of the lower jaw, the first of these doctrines be carried out, the entire bone should be removed for disease on one side only; for, as Mr. C. Heath observes, "though the bone was originally developed in two halves there is nothing to prevent malignant disease spreading across the symphysis."

The difficulties attending the adoption of the first of these doctrines in partial excisions of the lower jaw, and the impossibility of carrying out the second, are doubtless factors which largely promote the chances of recurrence of malignant disease in such operations. But even though they may not perhaps materially lengthen life, it must be admitted that recovery from them is, as a rule, rapid, union of the wound is immediate, is attended with little constitutional disturbance, and, as Sir J. Paget has said of excision of the tongue, is more than "justified by the great comfort which it gives."

A study of the cases, too, cannot fail to impress the reader with the eminently satisfactory results that may be confidently looked for when the disease in the case operated on is of a benign type; showing, especially in reference to prognosis, the necessity for careful differentiation of the many and various pathological processes met with in this situation. The case of excision of the tongue and floor of the mouth for lingual cancer (No. XI.) illustrates the signal advantages derived from the use of the écraseur in that formidable operation; these being, a diminished risk of hæmorrhage and secondary septic infection, together with freedom from pain, and the avoidance of the necessity for any such prophylactic measure as opening the larynx or trachea.

The larger my experience of excision of the tongue becomes the stronger is my conviction of the superiority of the method by

écraseur over any cutting or cautery operation. No one can be more sensible than I am of the operative ingenuity displayed in many of the cutting operations that have been suggested, notably that of Mr. Walter Whitehead—one which has so warm an advocate in Mr. Lund, of Manchester; but still, as I pointed out in a communication on lingual excision, made at the Clinical Society of London, in 1881, the hard logic of statistics clearly points to diminished risk of shock, hæmorrhage, and secondary septic complications, when the écraseur is employed for the removal of the tongue. When the disease is very extensive, necessitating the removal of the greater part of the organ, the method I advocated in my "Records of Operative Surgery," published in this Journal in 1877, and which is a modification of the operations of Jæger, Sir James Paget, and Mr. M. Collis, but possessing material points of difference from those procedures, appears to me to best fulfil the necessary requirements.

In cases where the disease is very limited in extent, the plan recommended by Sir G. Porter, of transfixing the tongue with two strong but pliant iron wires well behind and to the inner side of the new growth and at the same point, then attaching a wire écraseur to the free ends of each, and dividing simultaneously the tissues by one écraseur in front of the disease, and by the other behind it, seems to me to be a method possessing undoubted merit. I recently adopted this method in the case of a gentleman affected with lingual carcinoma, assisted by Sir G. Porter, my colleague Dr. William Thomson, and Mr. Ormsby, and I was much pleased with the result obtained.

It must be admitted, however, that no single method of tongue excision, of the many that have been suggested and practised, can be said to meet the requirements of every case; and, doubtless, instances of lingual cancer at times come under the notice of the operating surgeon which necessitate the adoption of some of the more formidable plans that have been recommended—such, for example, as those of Roux, Langenbeck, Professor Syme, and Billroth—cases to which the methods of écrasement are scarcely applicable. Briefly, my contention is this—that in the instances where the disease is comparatively limited in extent, and confined to the tongue—a group which constitutes the great majority of these cases—an écrasement operation such as I have advocated is attended with less risk, immediate as well as remote, than any cutting operation performed with either scissors or knife, and

renders unnecessary, as preliminary steps, either splitting the tongue, as performed by Cloquet, and more recently advocated by Mr. Morrant Baker, ligature of the lingual artery, laryngotomy, or laryngo-tracheotomy, as prophylactic measures.

The case of excision of the tongue also shows the desirability of frequent antiseptic ablution of the wound during the convalescence of the patient, and. lastly, illustrates the great advantages derived from the use of what I would venture to term a traction ligature—viz., one placed through the base or root of the tongue, and well behind the line of section. This I can strongly recommend, feeling confident that in the event of secondary hæmorrhage it will be found, as in the case above alluded to, and presently to be detailed, of the greatest advantage in facilitating the discovery and securing of the bleeding vessel.

One or two other practical points connected more especially with partial excisions of the lower jaw may be noted. One of them is the absence of any necessity for a division of the red border of the lip. Another the desirability of getting as much room as possible for a free division of the soft parts previously to making any section of the bone. The German method of making "buttonhole" incisions over the situations where the bone sections are made does not commend itself to my judgment, not only on account of the difficulties of the operation being increased thereby, from insufficient space to work either a resection or a chain saw, but also because the adoption of such limited incisions prevents the operator satisfactorily determining the most desirable points for making the bone sections—those, namely, where he will feel most confident the osseous structures are free from disease.

There are certain alleged troubles connected with partial excisions of the lower jaw which, however, have not been sources of any great embarrassment in the cases I have operated on. The first of these is a falling back of the tongue, causing danger to the patient from suffocation. To prevent this it has been recommended to pass a double ligature through the apex of the tongue, drawing the latter forward and fastening the ends of the ligature to a hare-lip pin used to bring the edges of the skin-wound together. This may be done as a precautionary measure, but the necessity for it I have not seen arise. Another is the inconvenience arising from the remaining portions of bone being drawn in. This did occur in one of my cases, and what I found proved most effectual in preventing its recurrence was the application of that

part of Mr. L'Estrange's apparatus for fractures of the lower jaw, which I always employ to correct the lateral overlapping displacement occasionally met with in that injury. A third alleged untoward circumstance is hæmorrhage from the dental artery. To arrest this Mr. Heath recommends the actual cautery, which doubtless answers very well in most cases, but I have found nothing better for this purpose than plugging the dental foramen with a fine pointed piece of wood. To this is attached a strong thread of silk by means of which the plug can be removed the day after the operation. This device will be found as simple as it is efficacious.

For cosmetic purposes it is desirable, especially where the patient is a female, to make the external incision more below and behind than in front of the ramus of the jaw; and to promote rapidity of union of the wound I would recommend the application of numerous points of suture by means of the finest entomologist pins. By their employment it will be found that the minimum of cicatricial deformity will be the result.

CASE I.—*Osteo-cystoma; Excision of Tumour with Portion of Lower Jaw; Recovery.*—Thomas C., aged eighteen, a healthy-looking, well-nourished boy, was admitted into the Richmond Surgical Hospital, under my care, on November 14th, 1879. He stated that twelve months previously he suffered very severely from toothache, and he consulted a dental practitioner who advised him to have the tooth, which was affected with carious disease, removed. An attempt was made to remove it, but the operation was unattended with success. Shortly after this the patient observed an enlargement of the lower jaw which went on increasing in size until it reached the dimensions it had on his admission into hospital. The boy suffered no pain or inconvenience from it nor did it interfere with the motion of his jaw, the only trouble being the deformity which was so very great that both he and his parents were most anxious to have it removed. On making an examination I found the soft parts over the tumour, which was about the size of a Tangerine orange, perfectly normal; but the tumour itself externally was extremely hard and smooth, while with respect to the inner surface of it, on opening the mouth I found that one spot was particularly soft and yielded to pressure with a crepitating sensation. All the rest of the tumour was perfectly dense and hard. Two or three days after this examination, an opening occurred close to the situation where the diseased tooth had been, and through this a

Fig. 1

Osteo-cystoma of Inferior Maxilla—Excision.

(From a Photograph taken after the Operation.)

Fig. 2

Excision of Upper Jaw, for removal of large
Osteo-fibromatous Tumour,
growing from the base of the skull.

(From a Photograph taken after the Operation.)

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small amount of clear, honey-like fluid of a pale yellow colour exuded. Having regard to the history of the case, the appearance of the tumour, and the condition of the surface of it both externally and internally, I came to the conclusion that it was essentially benign and probably an example of osteo-cystoma. In this view my colleagues concurred, as well as in the opinion I formed that to afford permanent relief to the patient from the deformity he suffered from, nothing short of a partial excision of the lower jaw would suffice. I was led to this from observing an obvious and uniform expansion of the bone in every direction in the portion of it where the tumour existed. An opening into and destruction of the cyst from within would not have materially affected the external deformity. Consequently, I determined to excise the portion of the bone in which the tumour was situated. The removal of the tumour was attended with much difficulty, the hæmorrhage in particular being specially embarrassing. As regards the operation, the circumstance most worthy of being emphasised was making the incision far back and downwards, so as to bring the cicatrix as much underneath the jaw as possible. It does not in the slightest degree interfere with the convenience of the operator, and it in no small degree helps to conceal the fact of the operation having been performed.

In the evening, after the operation (8 p.m.), I found the patient very restless and suffering much pain. Pulse, 110, and temperature, 99·4° F. Pain promptly relieved by a hypodermic morphia injection.

Nov. 20th.—Patient much better. Temperature, 99·2°. Pain much less; able to take liquid food—beef-tea and milk—without assistance; very little discharge from the wound.

21st.—All going on well. Patient had a good night and is free from all pain. Pulse and temperature, normal.

22nd.—Patient looking bright and well; absolutely no discharge; the wound quite united.

23rd.—Was able to sit up; suffering no pain or inconvenience.

From this period everything went on most favourably—the union being complete. On December 6th the patient returned home. A reference to the accompanying lithograph (Plate II., Fig. 1), from a photograph taken subsequent to the operation, will give an accurate idea of the appearance of the patient at the time. There is no deformity.

As regards the growth or formation of the tumour there can be

little doubt that in this case it was due to the irritation of the carious tooth, and not to the existence of a misdirected tooth, or one that had been too deeply sunk in the body of the bone, or that had been arrested in its development before it reached the surface.

These, according to Mr. Tomes, are the chief causes of these dentigerous or membranous maxillary cysts, a form of disease much more frequently observed in the upper than in the lower maxilla. The cyst was lined with a thick, tough, leathery membrane, which easily peeled off and which secreted the melicerous fluid already alluded to. The walls of the cyst were of irregular thickness, being in some places very thin. As regards the production of these cysts, we may, I think, agree with Mr. Tomes' view, that they are induced by a fluid effusion taking place between the enamel of the teeth and the surrounding soft parts, which is increased in quantity by any irritation that ensues, and the fluid thus increasing in quantity expands the bone in every direction. Whether the irritation was produced by disease or by the malposition or maldirection of the teeth, the result would be the same.

Case II.—*Large Cystic Tumour of the Upper Jaw—"Hydrops Antri," or Dropsy of the Antrum; Excision of greater portion of the Cyst; Recovery.*—The fact that surgeons of the highest repute and experience have occasionally failed to recognise the nature of these tumours and adopted in consequence an unnecessarily severe line of treatment, is a sufficient proof of the great difficulty that at times surrounds their diagnosis and the importance of making it accurate. The following case, however, is not specially remarkable on account of any great difficulty that attended its diagnosis, but is chiefly of interest from the comparative rarity of the disease, the exceptionally large size of the tumour, and, lastly, from the satisfactory result that followed the operation performed for its cure.

Robert F., aged twenty, an upholsterer by occupation, a strongly-built, healthy-looking young man, was admitted into my wards in the Richmond Surgical Hospital, on Jan. 12th, 1880, suffering from a large tumour on the left side of his face. The tumour was painless, and, except for the great disfigurement, was not a source of any annoyance to him. The integuments were healthy-looking and freely movable over the tumour. On examining it externally, an indistinct fluctuation was perceptible, but on the inside, above the alveolus, it was quite evident; and also at different points a crackling sensation like that of dry parchment was distinctly felt. A

 Plate No III. Vol. LXXVI No.143.

Fig 1.

(From a Photograph taken before the Operation.)

Fig 2

(From a Photograph taken after the Operation.)

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MR STOKES ON EXCISION OF CYSTIC TUMOUR OF UPPER JAW.

large carious molar tooth was found which, in all probability, was connected with the origin and growth of the tumour. This had of late, the patient stated, materially increased in size, and his great dread was the possibility of its taking an inward direction and obstructing respiration and deglutition. For these, as well as cosmetic reasons, he was very anxious to have an operation undertaken, and, accordingly, I agreed to accede to his wishes. The operation, which I performed on Feb. 25th, was very simple, and consisted in first removing the large carious molar tooth, and in doing so I gave exit to a large quantity of a pale-yellow, amber-coloured glairy fluid. I then made a free incision above the alveolus into the interior of the cyst, and with a strong curved scissors removed a large portion of the cyst wall. I then examined the interior of the cavity carefully, to ascertain if there were any smaller cysts, and not finding any, I proceeded to pack the interior of the cavity with narrow strips of lint, soaked in a solution (1–30) of carbolic acid. On the following day this was removed and replaced by another. Subsequently, the treatment consisted simply of frequent syringing with various antiseptic lotions. On March 13th the patient returned home, nothing untoward having occurred during his convalescence, and all deformity removed. An accurate idea of the appearance of the patient before and after the operation can be obtained by reference to the accompanying lithographic drawings (taken from photographs) of the patient (Plate III.).

The next two cases, Fibroid Enchondroma of the Palate, and Fibroma growing from a most unusual situation—namely, the inside of the zygoma, also illustrate the satisfactory results that may be looked for from excision.

Case III.—*Large Fibroid Enchondroma of the Palate; Excision; Recovery.*—The following case, from its exceptional rarity, is of much clinical interest:—

A boy, aged eight, was admitted into the Richmond Surgical Hospital, under my care, on Feb. 10th, 1879, having been recommended to me by my friend, Dr. Clibborn, of Kiltegan. The child's parents informed me that he had never complained of anything in connexion with his throat until about six weeks previously to his admission into hospital, when they observed a sudden change in the quality of the boy's voice. On opening his mouth they perceived a large prominence occupying the greater portion of his palate. The boy was well nourished and healthy-looking, and had

never suffered from anything except the usual infantile diseases. There was no history in his family of scrofula or of cancer. On examining the tumour I found that it occupied mainly the left side of the palate, and that although it appeared to cross the mesial line it did not really do so, but merely overlapped it. It was very vascular, and numerous vessels were observed ramifying over its surface. The boy suffered nothing from difficulty of deglutition, nor from any impediment to respiration through the nostril on that side. On passing a Eustachian catheter no obstruction was found in the pharynx. There was no fluctuation, but the tumour was decidedly elastic, and some portions were considerably denser and harder than others. At certain points I felt distinct, apparently cartilaginous, nodules. There was apparently no adhesion of the mucous membrane to the tumour, as it moved freely over it. On the front of the tumour was a depression occupied by a superficial ulceration; from this there was no hæmorrhage at any time.

A point of practical importance in the case was to determine the origin of the tumour—whether, namely, it grew from the base of the skull, from the roof of the nasal fossa, from the hard, or in the soft palate. The nature of the operative procedure having to be determined, to a great extent, with reference to the situation of the tumour, and therefore it was all-important to determine what its origin was. I determined, if possible, to remove the tumour without making any external wound. Accordingly, after opening the mouth as wide as possible by T. Smith's gag, I made a free incision over the anterior aspect of the tumour, and proceeded to dissect the mucous membrane off the tumour. This being done, and no adhesions being found, I was enabled to pass my finger round it, and eventually succeeded in enucleating and removing it. I found that it had no attachments to any of the neighbouring osseous structures. The absence of any difficulty in passing an instrument down through the nasal fossa was chiefly the reason that made me come to the conclusion that the tumour had not its origin from the base of the cranium; but I did think that it was possibly attached to the palate or superior maxillary bones, in which case I should have had to split the hard palate, and arrive at the tumour in that way. I found, however, that it was essentially in the soft tissues of the palate itself, and, in fact, lodged in its substance.

On making a section of the tumour after its removal, I found its substance to be very firm, consistent, and elastic, and rather more dense towards the centre than the circumference. For a short time

after the operation there was very sharp hæmorrhage, but this was checked by pressure and cold, no vessel having to be ligatured. The wound rapidly united. In examining the tumour I had the assistance of the late Dr. R. Harvey. The tumour was composed of fibrous tissue over a cartilaginous matrix. The greater portion of it might be described as a fibroid enchondroma. It had also, Dr. Harvey stated, "masses of round cells, evidently of recent growth, and of a more or less sarcomatous nature."

There has been no evidence of any recurrence of the tumour. The condition of the palate before operation can be appreciated by reference to the chromo-lithographic drawing forming the frontispiece.

Case IV.—*Large Fibroma growing from Zygoma; Excision; Recovery.*—The very unusual situation in which the tumour in this case had its origin renders it one of considerable interest.

S. T., aged seventeen, by occupation a glazier, a strongly-built, healthy-looking youth, was admitted into the Richmond Surgical Hospital, under my care, on the 6th of last March, on account of a tumour about the size of a Tangerine orange situated below and internal to the right malar eminence, and which projected considerably into the mouth. The patient did not suffer, excepting as regards deformity, in any way from the growth, which was hard, apparently uniform in consistence, and freely movable. It was first observed by the patient about eight months previously to his admission into hospital, and its origin was attributed by him to the extraction of a molar tooth—an operation which was not, in his opinion, satisfactorily performed. There being no contra-indication to the operation, I determined to remove the tumour, and if possible to do so by an intra-buccal operation, avoiding thereby the formation of any external cicatrix. On March 9th the operation was undertaken. I commenced by making a free incision, dividing the mucous membrane, and other soft structures covering it, at the situation where it was most prominent in the mouth, hoping to find that the growth had no very deep adhesions, and could be, so to say, enucleated. In this, however, I was disappointed, finding that a portion of the growth passed upwards and backwards to a point much further than I anticipated. After many ineffectual attempts to remove the tumour through the mouth, I felt reluctantly obliged to make a free external incision, dividing the cheek from the malar eminence to a point about a quarter of an inch above the angle of the mouth.

This enabled me to determine the full extent of the growth, and I found that it passed back to the zygomatic fossa, and was attached by a broad pedicle to the posterior portion and inner surface of the zygoma. When detached from this. the removal of the tumour was unattended with difficulty. Fortunately very little hæmorrhage attended the operation, and the edges of the wound were then brought together with numerous points of interrupted suture. For many hours subsequent to the operation the patient suffered much from sickness, due doubtless to the ether he had inhaled, and in the evening he complained of severe headache. The temperature at 9 p.m. was 101·3°, and pulse 108.

March 10th.—The patient did not sleep much, and still complains of headache. The right side of the face is much swollen, and an erysipelatous blush is observed on the forehead. Temperature, 104°; pulse, 132.

11th.—Patient had a very bad night; slept little; erysipelatous inflammation much more extensive; eyes completely closed, and numerous vesicles have appeared on the forehead and side of the face. Temperature, 104·1°; pulse, 144. The bowels being much confined a purgative was given. and iron and quinine administered internally. The wound, however, appears satisfactory.

12th.—The patient is much better this morning; face not so swollen. Temperature, 99·2° ; pulse, 80.

13th.—Patient much in same way; still complains of headache ; appetite bad; mouth frequently syringed with permanganate of potass lotion. Temperature. 99·3°

14th.—Patient doing very well; swelling of face quite subsided. Temperature, 98·2°; pulse, 84.

From this date the progress of the case was quite satisfactory, and on the 18th of March the patient returned home.

Case V.—*Fibro-sarcomatous Tumour of the Superior Maxilla; Excision of the Tumour and greater portion of Upper Jaw.*—J. B., aged fifty-eight, a strong, healthy-looking individual, who had always led a temperate and regular life, was admitted into the Richmond Surgical Hospital, under my care, in the early part of November, 1872. He stated that eighteen years previously to his admission into hospital, an unsuccessful attempt was made by a local dental surgeon to extract an upper molar tooth, and that in the attempt the tooth was broken. Three or four months subsequently he observed a small tumour of the size of a hazel nut,

which appeared behind the situation of the tooth. This tumour was soft, and on squeezing it externally, some serous fluid was pressed into the mouth. This was followed by a diminution in the size of the tumour, but it filled up again, and so it went on slowly increasing until it reached the size of a bantam's egg. It then went on rapidly growing, and in the course of a year he presented himself at the hospital. On examining the tumour it was found to be uniformly soft and elastic, free from pain, and the skin perfectly free and movable over it. There were no signs whatever of any glandular contamination, and about the centre of the tumour there was an ulceration, which had none of the characteristics of the ulcers seen in connexion with carcinomatous affections; the edges were smooth, there was no fœtor from the discharge, and the surface was covered with healthy granulations. The ulceration was evidently caused by the pressure of the tumour on the integuments. The patient was free from lancinating pains, his appetite was good, he slept well, and had not got that peculiar cachectic appearance that persons generally have who are afflicted with cancer. Looking at all these circumstances—the great chronicity of the case, the absence of glandular contamination, the appearance of the ulcer, the health of the patient being generally unaffected, I came to the conclusion that the tumour I had to deal with was not a cancerous one. I accordingly recommended the removal of the growth, which I stated to the patient would, in my opinion, probably necessitate the excision of the greater portion, or possibly the entire, of the superior maxilla. I accordingly performed the operation, and found, as I had anticipated, that the removal of the greater portion of the bone was required. The operation, which was done by a slight modification of Fergusson's method, was not attended with any special feature of difficulty. There was, doubtless, very profuse hæmorrhage at one stage of the operation, which, however, I succeeded in checking, mainly by the free application of the actual cautery, which I used also to destroy any portions of the diseased tissue which might have remained. During the convalescence of the patient no secondary hæmorrhage or any other untoward circumstance occurred. The wound healed, as they usually do in these cases, with great rapidity, and the patient shortly afterwards returned home. More than a year subsequently I heard of this patient, and then it was stated there was no evidence of a return of the disease. Anxious that my view of the nature of the growth in this case should be either verified or disproved, I asked the late

Dr. Reuben Harvey, an accomplished histologist, to examine the tumour, and it was satisfactory to learn that the result of his examination confirmed my opinion that the tumour was not of a malignant nature.

Case VI.—*Sarcoma of Inferior Maxilla; Excision; Recovery.*—H. F., a healthy, well-nourished female, aged twenty-nine, was admitted into the Richmond Surgical Hospital under my care, on February 21st, 1879, suffering from a large tumour, fully the size of a hen's egg, which involved the ramus and angle of the inferior maxilla on the right side. She first took notice of it in 1875. No cause, traumatic or otherwise, could be assigned. The tumour was painless, semi-elastic to the touch, smooth on its surface, both externally and internally. The growth of the tumour was mainly in the former situation, though in the inside there was a very apparent fulness, and evidence that the bone was largely engaged. The tumour therefore, clearly, was one not so much *on* the bone as *of* the bone. In the sub-maxillary and sub-lingual regions there were no enlarged glands to be found. Latterly the tumour had manifested an activity in its growth, which was a source of much disquietude to the patient, and this was the main determining factor in the case which made her determine to have the tumour, at all hazards, removed. On March 1st, I performed the operation of excision. Posteriorly the bone was divided at the neck of the condyle, anteriorly about three quarters of an inch to the right of the symphysis. The latter section was made partly by a chain saw, but completed by a powerful-toothed bone forceps. The operation was attended with much difficulty and hæmorrhage, and occupied fully an hour in its performance. During the initial stages of the operation the patient was kept under the influence of ether, which in this instance produced much sickening, both during and for several hours subsequent to the operation.

March 2nd.—Patient very flushed and feverish. Pulse, 146; temperature, 103° F. Her food consisted solely of iced milk, which was very grateful to her. Her bowels being confined, she got an enema, which had the desired effect.

3rd.—Pulse, 114; temperature, 102° F. There was a blush of inflammation passing down the right side of the neck for some distance. The dressings were changed.

4th.—Pulse, 108; temperature, 101·6°. There was much discharge from the mouth, which was frequently syringed out with a

weak solution of permanganate of potassium. The suture pins were removed, and the wound found to be firmly united. Patient not suffering pain.

6th.—Pulse, 92; temperature, 98·5°. The inflammatory blush on the neck had disappeared.

7th.—Pulse and temperature normal; everything progressing favourably.

15th.—Since date of last report she has gone on well. To-day a fluctuating swelling appeared on her neck, which was diagnosed as an abscess and opened. A considerable quantity of pus was evacuated. After this nothing untoward occurred during the convalescence of the patient, and early in April she was enabled to return to her home, a deformity surprisingly small existing, having regard to the magnitude of the operation that had been performed.

The histology of the growth proved it to have the characters of a round-celled sarcoma.

Case VII.—*Excision of a Tumour (osteo-fibroma) of exceptionally large size, growing from the base of the skull, pressing on and partially absorbing the right superior Maxilla and necessitating the removal of that bone.*—Early in October of last year, J. T., aged forty-seven, a farmer by occupation, was admitted into the Richmond Surgical Hospital, under my care, having been recommended to me by my friend Dr. G. Plunkett O'Farrell. The patient was suffering from the existence of a large tumour intimately connected with the left superior maxilla. It extended chiefly into the mouth, filling to a great extent that cavity, resting on the tongue, and almost extending across to the right tonsil. This rendered both mastication and deglutition most difficult. Externally there was, on the left side of the face, rather a fulness or tumefaction than any distinct tumour. Two points of apparent fluctuation on the surface of the tumour inside the mouth were observed, one to the left of the incisor teeth, and the other about the centre of the tumour. The patient first noticed the growth about eighteen months previously to his admission into Richmond Hospital; but, judging from the connexions which I subsequently found, the tumour had probably existed for a much longer period. The patient did not suffer any pain; there were no ulcerations on its mucous surface, and externally the integuments presented a perfectly healthy appearance. His general health was unaffected. As the tumour was making a serious

advance into the cavity of the mouth, to a great extent filling it up, I determined, strengthened by the coinciding views of my colleagues, to remove the growth; and on October 30th the operation was performed. The incisors being extracted, an incision was carried from the inner angle of the eye along the side of the nose, then horizontally to the septum, and finally through the lip vertically downwards (Fergusson's incision). The flap was then dissected backwards. I found, on making slight pressure on the anterior surface of the tumour, that the bone yielded, giving the sensation of parchment. At this stage of the operation I dissected the nasal tissues towards the right side, and opened into the nasal fossa. The two superior maxillary bones were then separated by a powerful, curved, toothed forceps. From the inner angle of the eye an incision was carried horizontally outwards towards the malar eminence, and on dissecting the flap further back towards that point, I was enabled better to estimate the extent of the tumour. With the forceps I separated the nasal processes of the superior maxillary from the nasal bone, and carried on the division of the bone horizontally outwards below the infra-orbital ridge, being anxious to preserve that portion of the bone. The separation of the maxilla from the malar bone was now effected, and I was then made fully aware of the extensive amount of absorption of bone which had been caused by the tumour. On lifting up the portion of bone separated by the forceps, and passing my finger upwards and backwards, I found the floor of the orbit had been invaded, and the tumour attached mainly to the cranial base, mostly to the body of the sphenoid. Below, it had become attached to the left half arch of the palate, which was removed with the tumour. Externally, the growth extended to a point behind the malar eminence. The extensive attachments of the tumour superiorly, inferiorly, and laterally, made its removal a matter of extreme difficulty. Great hæmorrhage attended the operation, which was checked mainly by the free application of the actual cautery. At first this failed to arrest it, and I then endeavoured to apply ligatures to the bleeding points; but owing to the great depth at which they were, this was found impossible. I then applied the actual cautery a second time, and, fortunately, with success. Before closing the wound, I placed a plug deep into it when the bleeding occurred, and then brought the flaps together with numerous points of carbolised catgut sutures, except at the divided portions of the lip, which were approximated with hare-lip pins and a figure-of-eight suture.

The patient's recovery was uninterrupted, immediate union taking place throughout the entire extent of the facial wound. The deformity resulting from the operation was surprisingly little.

Mr. Abraham, the Curator of the Museum of the Royal College of Surgeons in Ireland, kindly examined the tumour with his accustomed care; and the note with which he furnished me in reference to its pathology will doubtless be read with interest:—

"The sections of the growth examined are made up of lobules of epithelial tissue, separated by septa of young fibrous tissue, of which the larger sometimes contained newly-formed trabeculæ of bone. The epithelial cells have large well-defined spherical or oval nuclei, and their cell-substance is more or less granular. In shape, they are occasionally columnar, but more often polygonal, or with an indistinct boundary. They are situated in one or more layers around alveolar spaces, which are generally occupied by a mass of amorphous material. In some parts the spaces are elongated and parallel, giving the tissue the appearance of a collection of tubular glands."

The points of special clinical interest in this remarkable case were—the exceptionally great size of the tumour; its extensive attachments to the sphenoid, palate, malar, and superior maxillary bones; the alarming hæmorrhage that attended its removal; the rapidity and completeness of the patient's convalescence; and, lastly, the difficulty of arriving at a definite conclusion as regards its pathology. The probabilities of the recurrence of the growth are, I should say, great; but I have not been able to ascertain if there be any evidence of its return as yet.

The lithographic drawing (Plate II., Fig. 2), taken from a photograph, illustrates how little deformity exists after so formidable an operative procedure.

Case VIII.—*Extensive (Secondary) Epithelial Cancer of the Lower Jaw; Excision of greater portion of that bone as well as of lower lip.*—James B., aged thirty-five, by occupation a labourer, was admitted into the Richmond Surgical Hospital under my care, on June 7th, 1880. The condition of the patient on his admission into hospital was an exceptionally painful one. The left half of the lower lip was gone, having been destroyed by one of that largely-patronised but pernicious class termed "herbalists," who, as every hospital surgeon of experience knows, cause many a sad and painful death.

The anterior portion of the lower jaw was much thickened, mainly from infiltration of the muco-periosteum covering the alveolus, and along this, chiefly on the left side, was extensive ulceration. The posterior surface on same side was also similarly affected, and the teeth in this situation quite loose. There was great fœtor from the discharge, which was very profuse.

When questioned in reference to family history he stated that it was most favourable. All his brothers and sisters were strong and healthy, and he had never before had a serious illness in his life. He attributed it altogether to his habit of persistent smoking, to which for very many years he had been addicted. A little more than a year ago, he first got a small sore on his lip at the situation where he usually held his pipe. This he irritated by constantly picking at it. It then grew much larger, spreading downwards. In August, 1879, the patient was operated on in Birmingham, but the disease appears to have returned almost immediately. In January following he applied a plaster to the lip which was given to him by an "herbalist," which had the effect of making a large portion of the left half of the lower lip slough away. After a few months' interval the disease broke out anew, and from this time the growth became very rapid. On admission into hospital the whole of the anterior portion of the lower jaw appeared to be infiltrated, and the sub-maxillary glands also much enlarged. Otherwise the patient's health was excellent, and the result of a careful examination of the lungs and other organs afforded no evidence of anything abnormal.

On June 14th I removed the diseased mass, excising along with it the greater portion of the lower jaw. The patient having been put under the influence of ether, a free incision was made along the lower border of the jaw, terminating about a quarter of an inch behind each angle of the bone. The somewhat excessive hæmorrhage from this incision was readily checked by the application of several of Kæberlé and Nunneley's artery forceps. A vertical incision corresponding to the symphysis menti was then made, and the right half of the lower lip, and the tissues immediately below it, forming a somewhat quadrilateral-shaped flap, were dissected back to a point behind the angle of the jaw, and a section of the bone made at that situation with a fine dissection saw, such as I usually employ in sub-periosteum excisions. A somewhat similar procedure was adopted on the opposite side, the flap being necessarily much smaller in extent owing to the necessity of making it as far

as possible from the seat of the disease. The bone was then divided on the left side at its angle. Fearing that on the removal of so large a portion of the bone there might be subsequent trouble from retraction of the tongue or hæmorrhage, I passed a strong silk ligature through the tip of the tongue to enable me to draw it forward if necessary, and facilitate the arrest of secondary hæmorrhage should it occur. This, fortunately, did not take place, which was doubtless due to the great care which my colleagues, Messrs. Thomson, Stoker, and Corley and I took to secure any bleeding points at the time of the operation. This was done by the application of numerous points of interrupted, carbolised catgut sutures, and also by the actual cautery. Zinc chloride solution was then applied to the surface of the wound. The flaps were then adjusted, and this being done I was gratified to find that no great tension or stretching of the tissues was observable. Hare-lip pins and soft floss silk I chiefly used in bringing the edges of the flaps together. Carbolic dressings were then applied, and the patient was then brought back to his ward. During the day he was fed chiefly on iced milk, and as there was some tendency to a hæmorrhagic oozing a frequent syringing with iced water was employed.

On the following day a considerable flow of saliva was observed, but untinged with blood. Pulse and temperature hardly above the normal standard. On the third day the patient complained of much pain, and also of hunger. To relieve the former he got a hypodermic injection of morphia, and for the latter, in addition to the iced milk, gruel, beef tea, and eggflip. The patient slept well. It is unnecessary to give the daily record of this case subsequent to the operation, the only untoward result connected with the operation being the establishment of a salivary fistula. For this, however, I did not, considering all the patient had gone through, deem it desirable he should undergo at the time any further operation, and recommended him, therefore, to submit to the inconvenience of the fistula and to return home. This he did in August, two months after the operation.

Case IX.—*Extensive Epithelioma of Lip and Chin, involving Alveolus of Lower Jaw; Excision of Ulceration, and of portion of Lower Jaw; Cheiloplastic Operation subsequently performed.*[a]—M. W., aged forty-five, a farmer by occupation, was admitted into the Richmond Surgical Hospital, under my care, on October 21st,

[a] From notes taken by Mr. Cassidi.

1881. He was suffering from an extensive epithelial ulceration involving the entire of the lower lip, and extending widely beyond each angle of the mouth. He stated that about two years previously he sustained a fall, and cut his lip with one of his teeth. A "lump" immediately after this appeared, and from it the disease rapidly spread. About six months before his admission into hospital he consulted Dr. O'Farrell, of Boyle, who urged him to come to town in order that surgical operative interference might be undertaken before any further extension of the disease took place. The wise advice was not followed for six months, when, the ulceration having greatly increased in size, the patient at last realised his critical condition, came up to town, and placed himself under my care in the Richmond Hospital.

On examination I found the ulceration involved not only the red border of the lip, but extended downwards on both mucous and cutaneous surfaces of the tissues covering the bone. As already stated, it extended laterally beyond each angle of the mouth. The muco-periosteum was also engaged, being both thickened and ulcerated, and the lower incisors quite loose. Notwithstanding the great extent of the ulceration, there was no evidence of glandular contamination—a circumstance which had much to say in determining me to operate. The amount of disease present was so extensive as to preclude the possibility of performing either the cheiloplastic operations of Syme or Zeis—two procedures for which, in cases where the disease is sufficiently limited, I have a decided partiality. On Nov. 9th the operation was performed. On removing the extensively diseased soft structures I found the bone at each side of the symphysis more largely engaged than I anticipated. This accordingly was also excised, the bone being divided partly by resection saws and partly by bone forceps on each side immediately in front of the facial artery. The hæmorrhage, therefore, was fortunately not excessive. What gave me some anxiety on the completion of the operation was the tendency to retraction of the tongue. This, however, I succeeded in overcoming by means of a long acupressure pin, with which I transfixed not only the edges of the flaps at each side, but also included a portion of the muscular tissue of the tongue. This I found to be a most effectual expedient in preventing retraction of that organ. Only three vessels had to be ligatured, and the actual cautery, but sparingly, applied. Hare-lip pins and "figure-of-eight" silk sutures were employed for uniting the edges of the flaps. The

Carcinoma of Inferior Maxilla—Excision.

From a Photograph

FORSTER & CO. LITH. DUBLIN.

MR STOKES ON OPERATIONS ON THE JAWS, TONGUE, AND PALATE.

operation was necessarily a protracted one, but the patient, though much exhausted, rallied well after it. On being removed to bed he was given a hypodermic injection of morphia to lull the intense pain. This was repeated again at night, after which he slept fairly well. During the day there was a good deal of weeping hæmorrhage from the mouth, which, however, was eventually checked by ice, freely applied.

On the following day (Nov. 10th) I changed the dressing, found the wound looking well, and the hæmorrhage completely arrested. The patient had slept for some hours. Pulse, 72; temperature, 98·3°.

On 11th his articulation, which up to this had been quite unintelligible, was much clearer, the nurse being able to understand any wants he expresses. On the day following—pulse, 84; temperature, 98·5°—I removed all the large and most of the small pins, the edges of the wound having satisfactorily united. The mouth is washed out four times daily with a weak solution of permanganate of potash. On the 17th—eight days after the operation—the patient was allowed to be up. On the twelfth day (21st) I was distressed at observing an erysipelatous blush over the left side of the patient's face, extending as far as the ear. Pulse, 90; and temperature, 102·3°. Fortunately, however, this promptly subsided, the treatment being the internal administration, as well as the local application, of perchloride of iron. Nothing untoward interfered with the subsequent satisfactory progress towards recovery of the patient, and on Dec. 15th he returned home.

Case X.—*Cancer of Lower Jaw; Excision of the Tumour; Rapid return of the Disease.*—A married female, aged fifty-seven, was admitted into the Richmond Surgical Hospital, under my care, in December, 1879, having been recommended to me by my friend Dr. G. Plunkett O'Farrell. She was suffering from a sub-maxillary tumour of unusual dimensions, an estimate of which can be found by reference to the accompanying lithographic drawing (Plate IV.). The patient stated that for the past thirty-five years she had had a tumour underneath the lower jaw on the left side, but that until recently it had given her no sort of annoyance or trouble. She became the mother of a large family, and during the period above indicated her health generally had been excellent. About six months previously to her admission into hospital she commenced to feel pain in the tumour, and shortly afterwards observed that it began to grow

with surprising rapidity. The pains she suffered from were of that acute, lancinating, stinging kind, so characteristic of malignant tumours. From considerations based on family history, there was no evidence of any predisposition to cancer. The free mobility of the tumour, its great chronicity, the absence of any constitutional disturbance, were all evidences of its benignity, but although this was probably its nature in the earlier stages of its development, it was not so, in my opinion, at the time of the patient's admission into hospital. Besides the characteristic pains, and the great rapidity of the growth of the tumour within a comparatively recent period, the integument covering it was of that peculiar dusky, livid, lurid hue which is so often associated with malignant tumours. The surface of the tumour was very irregular, and, in some situations, it was very much harder than in others. It extended from the right side of the middle line of the neck a little above the os hyoides, along the side of the neck as far as the parotid region on the left side. Having regard to the chronicity of the tumour, to the apparent absence of any deep-seated disease, and to the fact that the patient's health was otherwise unaffected, and that she was extremely anxious that a chance of her life should be given to her by the removal of the tumour, I consented to perform the operation of excision. The removal of the tumour was attended with very considerable difficulty owing to its deep adhesions, and also to the profuse hæmorrhage that attended the operation; and the procedure occupied, in consequence, a very considerable period. I succeeded, however, eventually in satisfactorily removing it, and without any untoward accident. As regards the subsequent progress of the case there is nothing noteworthy to mention, and the account of its daily progress is, therefore, unnecessary. The patient returned home, but I was sorry to learn, subsequently, that in the course of three months there was evidence of a return of the disease, and the patient soon after died, apparently from exhaustion.

The characters of the tumour, as seen on making a section through it, were remarkable. They were, in fact, two-fold. One portion, that which for so long a time remained unchanged as regards its size, and which, judging by the unassisted eye, had all the characters of a non-malignant growth. The rest of the tumour was of a different consistence. It was much more homogeneous, and a soft pulpy mass, breaking down on pressure, presented quite the character of a soft cancer. I submitted the tumour for examination to the Committee of Reference of the Pathological

Society, who were of opinion that the soft portion of the tumour was a primary carcinoma, independent of the glandular disease which constituted the harder portion of the growth. The gland showed evidence of invasion by the neoplasm.

Case XI.—*Extensive Epithelial Cancer of the Tongue, Floor of the Mouth, and Lower Jaw; Excision of Diseased Structures, and Two Enlarged Sub-maxillary Glands; Return of the Disease in less than Four Months.*—Mr. Henry B., a gentleman, aged fifty-six, who had spent several years in Australia engaged in sheep-farming—a life which necessitated at times much exposure, bodily fatigue, and hardship generally—was recommended to my care by my friend, Dr. Cahalan, in the early part of March, 1882. He was suffering from very extensive ulceration, which largely involved the tongue, floor of the mouth, and portion of the alveolar process of lower jaw at each side of the symphysis. There were also two enlarged glands—one below each angle of the bone. The patient's sufferings were extreme, depending on a three-fold source—the acute, sharp, lancinating pains, the fœtor, and the discharge. Added to these was the constant apprehension of hæmorrhage. He stated that five months previously he first noticed "two small specks" at the left side of his tongue, and that soon after these developed into ulcers which rapidly increased in size, eventually implicating fully the anterior two-thirds of the tongue, a large portion of the floor of the mouth, chiefly on the left side, and also the portion of bone already mentioned. A consultation was held, in which my two colleagues, Dr. Thomson and Dr. Corley, took part, and the patient was informed that although we could not hold out hopes of permanently relieving him by an operation, still the latter, in our opinion, would probably prolong his life and relieve his sufferings. This was quite sufficient to determine the patient to have an operation performed, and he urgently requested me to undertake it. On March 29th the operation was performed. I commenced by making a vertical incision through the lip and downwards over the symphysis. At each side of this two horizontal incisions were made along the ramus of the jaw, and the two somewhat quadrilateral-shaped flaps were dissected backwards on each side to a point about an inch in front of each angle of the jaw. With a powerful bone forceps all the diseased portion of the alveolus was removed. The tongue was then drawn forcibly forwards, this being much facilitated by Sir James Paget's method

of free division of the frænum and sub-lingual tissues at each side of it. I then passed horizontally through the tongue, and well behind the indurated portion of the organ, a strong acupressure pin, and behind this, on a level with the foramen cæcum, also from side to side, a stout silk ligature, in order that, in the event of secondary hæmorrhage, I would be enabled to draw forward the stump and secure the bleeding vessel. I then surrounded the tongue, and behind the acupressure pin, with the chain of an écraseur, and proceeded then to divide the organ. This was done very slowly, fully three-quarters of an hour being required before the complete division of the organ was effected. The left lingual artery was then seen curiously twisted and curled, but not bleeding. As a safeguard, however, I applied a strong catgut ligature round it. About twenty minutes subsequently sharp hæmorrhage from the right lingual artery occurred, and the great advantage to be derived from previously placing the strong silk carbolised cord through the base of the tongue was apparent. By means of it I was enabled to draw it forwards and secure the bleeding vessel. At no other period was there any hæmorrhage. As the disease was found to have extended to a certain extent along the floor of the mouth, the affected portion was removed by careful dissection. The cutting portion of the operation concluded by removing from the sub-maxillary and sub-lingual regions the enlarged glands that, as already mentioned, were in that situation. This, although attended with considerable difficulty, was satisfactorily accomplished. The two portions of the maxilla divided at the symphysis were then placed in apposition and sutured, the flaps brought together and fixed with hare-lip pins, and the rest of the incisions closed with silver sutures. A drainage-tube was brought from the floor of the mouth through the wound underneath the chin.

Mr. Cassidi furnished the following notes of the daily progress of the case after the operation:—

March 27th, 2 p.m.—Has apparently felt no excessive pain since the operation; experiences great relief from having small fragments of ice put in his mouth. 5 p.m.—Has been able to take a little iced milk; no hæmorrhage. 10 p.m.—Pulse and temperature good; no pain.

28th, 1 a.m.—Has not slept; suffers much from thirst. Temperature, 99·3°; pulse, 84. 4 a.m.—Condition the same. 7 a.m.—Going on well; not so thirsty.

29th.—Had a very good night, and looking much better; dressings changed, and mouth frequently syringed with a permanganate of potass lotion. Temperature, 99·4°; pulse, 72.

31st.—Condition of patient much improved; can speak a little.

April 1st.—All going on favourably; ordered an enema to relieve the bowels. As there was some difficulty in introducing the tube, a draught containing eight grains of resin of scammony was substituted. This acted satisfactorily.

From this date all went on favourably, and on the 14th April he left the hospital. About six months after his return home there was a recurrence of the disease, to which the patient succumbed.

ART. XIII.—*The Hungarian Cause Célèbre.* By F. J. B. QUINLAN, M.D., M.R.I.A.; Fellow and Additional Examiner in Forensic Medicine, King and Queen's College of Physicians.

DURING last June and July one of the Royal Hungarian law courts was occupied by a sensational criminal trial which riveted the attention of Central Europe, and the echoes of which extended far and wide. We are too apt to imagine, in these days of general public education and of scientific and material progress, that mediæval superstitions and witchcrafts are things of the past; but this trial displayed them pervading large communities with a breadth and force which shocked the common sense and conscience of the whole civilised world. On appeal to a superior court, justice was ultimately done; but, for a period of a year and a quarter, a number of innocent individuals were subjected to simple martyrdom on an accusation as atrocious as it was groundless. The acquittal pronounced by that superior court has not been ratified by the public opinion of the multitude; and, as a consequence, the unfortunate accused and their families have been ostracised and materially ruined—in fact, even at the present moment, a popular persecution as severe as that of Haman is raging against the Jews of Central Europe, and there is no Esther to come to their rescue.

On the 1st of March, 1882, a respectable Hungarian peasant girl, aged fourteen years, Esther Solymosi, was living in the rural district of Tisza Eslar, in the service of Frau Huri. She was a rather puny, ill-developed girl, inclined to be idle, and her mistress and she did not get on well together. On the morning in question, after receiving a severe scolding from her mistress for some

inattention, she was sent to the neighbouring hamlet to procure lime-putty for the purpose of making whitewash. She executed her commission, and was met returning with her parcel by her sister, Sophia Solymosi, and another girl named Julia Vamosi, near a plank bridge crossing a small tributary of the Theiss, and which Esther had to cross on her way home. From that hour to this Esther was never seen alive, and it is not certain that the body afterwards found in the Theiss was hers. There was no suggestion of elopement, and the first idea seems to have been that she had slipped or thrown herself into the river, and had thence been carried down the Theiss. The latter, arising from the Carpathian mountains, runs in a sluggish and very winding course of about 700 miles into the Danube. It contains vast mud banks and great reedy shallows, the abode of countless multitudes of fish and of wild birds; and the occasional disappearance of individuals and the non-recovery of their bodies are circumstances not unknown in South-eastern Austro-Hungary.

The matter would have probably been quickly forgotten but that early in April an uneasy rumour began to spread that Esther Solymosi had not been drowned, but had been decoyed into the village synagogue, and there her throat had been cut for the purpose of procuring Christian blood to be used in the Jewish sacrificial rites—an old superstition which will be noticed later on. A tremendous popular effervescence arose, for the Jews are not popular in Central Europe, where they occupy the *rôle* of the "gombeen men" of our own rural districts; and in both places occasionally resort has been had to new ways of paying old debts.

Fifteen Jews were arrested, including Saloman Scharf, the Jewish butcher, who was alleged to have cut Esther's throat; Joseph Scharf, the keeper of the synagogue; and Vogel, who was accused of having bribed the peasants Smilovics and Heitsko to row the corpse into the mid-channel of the Theiss, and pitch it overboard, when it would probably soon disappear. Witnesses appeared to support all this, including the two boatmen, and several women, who stated that they had heard the screams of the dying Esther proceeding from the synagogue. The most shocking testimony, however, was that of Samuel Scharf, aged five, the son of Joseph, and nephew of Saloman, the principal prisoners, who stated before the local magistrates that his father had enticed the girl into the synagogue, where his uncle had cut her throat, adding that his brother, Moritz Scharf, aged fourteen, had held the basin to receive

the blood. Moritz, on being arrested, stoutly denied this, but after 24 hours' detention made corroborative admissions. He varied the story, however, by stating that he had not assisted at the tragedy, but had witnessed it through the keyhole (which he pointed out) of the synagogue door, adding that he had seen in his father's house the parcel of lime-putty belonging to the victim. One of the earliest examples of forensic acuteness on record is to be found in the inspired volume, where the youthful Daniel, by separate cross-examination as to localities, confounded the elderly accusers of the virtuous Susannah; and it is to be regretted that the Shallows of Tisza Esslar did not employ this plan, as was afterwards done with such effect by the court of appeal.

On the 18th of June, nearly four months after the disappearance of Esther, and while the primary trial was still proceeding, a rumour suddenly spread that the body had been discovered on a mud bank of the Theiss. A female body in an advanced stage of decomposition had certainly been found in that river by some boatmen, and by them buried on the bank, but immediately afterwards exhumed, and about this body there was much difference of opinion. Esther's mother first stated that the body was not that of her daughter, but next day said that it was, and some rags of clothing which remained upon the corpse she then identified. The village schoolmaster swore that the corpse was not that of the victim; and the Lutheran pastor confirmed this view. Several neighbours gave contradictory opinions; and two local medical witnesses, the Apothecary Zuhanyi and the medical student Horvath, stated that, in their opinion, the body was that of a woman of twenty, and one of the better class of life. Their evidence, including an interesting point about a bruise* (which was admittedly on Esther's foot on the day of her disappearance), will be detailed later on, along with the testimony of the distinguished experts from the University of Buda-Pesth. It may be remarked in passing that all hair, except some of the eyelashes, had disappeared from the body when it was found in the river. One all-important point appears to have been completely overlooked by the excited community; for, as the illustrious author of the "Analogy" has well observed, it is a great fact that communities sometimes appear to go mad like individuals. The throat of the body (granting it to be that of the murdered girl) was not cut, nor did the body exhibit the slightest mark of violence. It would

* This bruise had been on Esther for several days, and had been occasioned by a cow which she was milking setting the hoof upon her right foot.

involve repetition to go further through the details of the primary trial; suffice it to say, that the accused were found guilty, and that an appeal was at once lodged in the Royal Court at Nyir Eghyhaza.

Nyir Eghyhaza contains about 16,000 inhabitants, and is the principal town of the commune of Szabolcs. It has no manufactures, and is the commercial centre of an agricultural district of a very primitive character. It is situated 126 English miles E.N.E. of Buda-Pesth, with which, however, it is connected by telegraph, but has no railway—the nearest station, Debreczen, being 31 miles almost due south of it. Here the appeal trial, most fortunately without a jury, took place amid great popular excitement, which was kept to fever heat by crowds of sympathisers from Tisza Esslar, who daily threatened any witnesses favourable to the accused; brought down the constant reprimands of the bench by ebullitions in court; and actually hooted the Public Prosecutor in the streets as soon as they found that he was against the popular view—in fact, public opinion ran so high, that those who believed that the body found in the Theiss was not that of Esther, accused the unhappy Jews of the commission of a second crime to cloak the first; and that although some of them were in prison and the rest hiding in terror. Amid all this ferment it is pleasant to say that the President of the Court acted with dignity and impartiality; that the Public Prosecutor exhibited a conscientious desire not only to punish the guilty but to shield the innocent; and that the bar and the medical experts displayed conspicuous ability. The Public Prosecutor made his preliminary statement, which, like the *actes d'accusation* of the *Code Napoleon*, was a smooth, flowing narrative of all the facts, or alleged facts, of the case, and wound up by stating that the only possible motive that could be assigned for the crime "was the desire to procure Christian blood for ritual purposes." The little Samuel was not examined, the court considering that he was too young to understand the obligation of an oath; but Moritz repeated his statements, and the most painful scenes of recrimination took place between him and his father and uncle, who were in the dock. The mother of the alleged victim was now called, but was not able to prove much, and the wavering character of her evidence as to the identity of the body deprived it of all value. She expressed her deep regret that she had none of the clothing worn by Esther on the day of her death, adding that she would bring it to the "fairywoman," who would soon tell her all about her daughter's

fate.[a] Sophia Solymosi, one of the two last persons who had seen Esther, was now called, and a startling piece of evidence was elicited. She swore positively that she had met her sister "after the Angelus" (midday), and, as Moritz swore that the murder took place in the forenoon, a discrepancy arose. Julia Vamosi sided with Moritz as to the hour; but, at a subsequent stage of the trial, this witness retracted, and admitted that Sophia's story was true, adding that she had been coerced to swear falsely in the first instance by the cruelty and ill-treatment of her own family, who were dead against the Jews. Here it may be remarked that the course of the trial disclosed a most astounding system of intimidation on the part of some of the local magistrates and police against any witnesses not hostile to the prisoner. Imprisonment (sometimes in stables) was resorted to; witnesses were deprived of food and compelled to swallow great quantities of water, slapped in the face, beaten with sticks, and in one instance threatened with the thumbscrew—in fact, any witness favourable to the accused was boycotted both by the populace and by some of the local authorities. The women who were alleged to have heard the screams of Esther were now examined, and as these ladies were allowed to téll what they saw, what they heard from others, and occasionally what they thought, their evidence was characterised by a diffuseness in the inverse ratio of its exactitude. One witness, Frau Feketê, a respectable person, aged sixty, stated that she heard the cries "when coming home from confession;" and the evidence of the Rev. Joseph Adamovics localised this hour after twelve. It may be added that it was not very clear where those cries came from. A number of Jews were now examined, with a view of proving where the different prisoners were upon the fatal day, and among them the wife of the prisoner Joseph Scharf—a procedure totally inconsistent with all the traditions of British jurisprudence. The principal point in her testimony was that her son Moritz was "malicious, disobedient, and obstinate." She swore that on one occasion, on being corrected for a fault, he had thrown a knife at her; and it may here be mentioned that Moritz was shown to have displayed the most rabid hatred against his co-religionists. He stated that he "did not wish to continue a Jew," and that they "were not

[a] What do the patrons of the recent "thought-reading" exhibitions in Dublin say to this? What is the exact difference between the Hungarian believer in the "fairy-woman" and the Irish supporters of one who asserted that he could read concealed writing and the numbers of concealed bank notes?

Magyars." Herr Eötvös, the able leading counsel for the prisoners, here made the remarkable announcement that Moritz was so very shortsighted that he could not have seen the alleged murder through the keyhole. A medical commission, consisting of Oculist Flégmann, Court Physician, along with Drs. Balcos and Josse, was at once appointed to examine into this allegation. Their report, along with some curious correlative evidence, will be described further on.

A number of witnesses were now called to give an account of the primary investigation; and here an incident occurred as sensational as any that ever took place within the walls of a court of justice. Koloman Peczeli, the local magistrate of Tisza Esslar, and clerk of the county court since 1879, was placed on the table, and detailed the various informations which had been sworn before him. While he was thus engaged Councillor Eötvös, who had been for some time scrutinising his features, interrupted his evidence, and said—"I think, sir, I have seen you before, and in the dock. Were you ever convicted of murder, and sentenced to fifteen years' penal servitude?" The infuriated Peczeli protested loudly against this question as "an insult and an outrage," but the lynx-eyed Eötvös was not to be thus baffled, and appealed to the President to direct inquiry. The witness was directed to leave the table, and two days afterwards the Public Prosecutor laid before the court an attested copy of the conviction and sentence, by which it appeared that Peczeli had served twelve years of his sentence, and had then been liberated by a Royal amnesty. Whether this Hungarian Jonathan Wilde still ornaments the local bench is unknown to the writer. It may here be remarked that two of the other witnesses for the prosecution fared badly in cross-examination as to their antecedents. One had to admit twelve months' imprisonment for manslaughter, and another three months for receiving stolen goods.

The medical evidence was now gone into. As in the first instance, the two local medical witnesses who had first seen the body were examined, not by the lawyers, but by medical experts. Apothecary Zuhanyi gave his evidence with a care for which he was complimented by the President. He said that the body had been found in the Theiss by the boatmen and immediately buried, notice being sent to the authorities. Bodies found were, on account of the heat of the climate, not left on the bank for sanitary reasons. In his opinion the body was that of a woman of the better class, and of about twenty years of age. The chest, however, was quite flat, and without any mammary development. There was a dark mark

on the right foot which he tried to wash off, but could not. The body was entirely devoid of hair, and exhibited no mark of violence. He had not made a *post mortem* examination. Horvath confirmed these details. Professor Relki, M.D., of Buda-Pesth University, was examined as to the absence of hair on the body. He said that the long hair of the head would, in the case of a body floating down a river, entangle in some projecting object, and would for a time anchor the body. By degrees the epidermis would separate, and the body would float down, leaving the hair behind it. The friction of the clothes would remove the hair from the rest of the body, except the eyelashes, which were stronger. The learned witness was now examined as to another point. It was conceded on all sides that there had been no blood spilt upon the wooden floor of the synagogue — the most careful microscopic and spectroscopic examinations having failed to discover any trace—and both sides laid great stress on this. The defence maintained that, if the girl's throat had been cut, as described by Moritz, there would have been blood spilt on the floor; while the prosecution contended that the blood had been carefully caught in a dish, as narrated by the informer. Professor Relki asserted positively that if the arteries of the neck had been severed blood would have splashed about in all directions. Questioned as to the difference of opinion upon the identity of the body, he said it was very hard to identify a body in such a state of decomposition, and without the accessory of clothing, &c.; and added that he had seen mistakes made in Buda-Pesth as to the identity of such bodies, and had himself made them.

Professor Michalcovics, M.D., agreed with the last witness with reference to the spurting of the blood incidental to the cutting of the arteries of the neck. This witness was interrogated with reference to a similar accusation brought against Jews in the Hungarian courts in the year 1791, in which it had been stated that the severed arteries of the neck had been "pasted up," and the effusion of blood thus prevented. This, Professor Michalcovics said, was impossible. He agreed with the last witness as to the way in which the hair had separated from the scalp. He expressed his opinion that bodies of drowned persons became decomposed in from four to five weeks. Interrogated by the crown with regard to the allegation that the hair had been removed from the scalp by shaving* by persons in the

* This point referred to one of the popular accusations against the Jews—viz., that they had procured a body, shaved it, dressed it in the garments of the missing girl, and thrown it into the Theiss.

interest of the prisoners, the Professor said that this was not so. Microscopic examinations of the scalp, carefully made in the medical laboratory of the University of Buda-Pesth, showed that the hair had been drawn out in the way described by the last witness, and in which he agreed.

Professor Scheuthauer, M.D., examined about the question of the splashing of the blood, said that the throat might be cut in such a manner that the blood would flow down the windpipe and cause suffocation, but that such a procedure would require great anatomical skill. Taking for granted that Esther died immediately, as described by the witness Moritz, the internal jugular vein must have been cut, which would cause death with convulsions in a few minutes. It was most improbable that this could be done without wounding the common carotid artery, in which case the blood would jet out in a sharp curve of from 2 to 2·50 metres. If the external jugular veins only were cut, death would not have taken place for over half an hour. If the throat had been cut as described by the witness Moritz, the blood would have certainly splashed about the floor. He agreed with the two last witnesses as to the way the hair had come off the head; this would occur in about six weeks. The hair most certainly had not been shaved, as asserted by the prosecution. The microscope showed that in some places it had broken off, and in other places it had been drawn out by the stream pressure acting on the decomposing follicles. With reference to the age of the body found in the Theiss, this witness was definite and clear in a manner that will gladden all scientific anatomists. He stated that he had examined every bone in the body, along with a committee of anatomists, among whom the various members of the corpse had been divided, and had been carefully inspected. From measurements and from a careful consideration of the ossification of the various epiphysal cartilages, he declared his determined conviction that the body was that of a female of from fourteen to seventeen years of age, and that the idea of the corpse being that of a woman of twenty was inadmissible. Decomposition, he added, would not affect this examination. Further, his opinion was that death arose from drowning. Finally, in common with the other experts, he expressed his opinion that the mark on the foot of the deceased was a bruise before death; this view, however, was given with much reserve on account of the advanced state of decomposition.

The medical evidence having thus concluded, the judges, counsel, and witnesses proceeded in a long train of carriages to inspect

the scene of the alleged crime, and an overwhelming force of police drew a cordon round the village, and enabled this inspection to be made free from all popular interference or even expression of opinion. Melancholy evidence was given of the sad necessity of these precautions. In the village the synagogue and the houses of the inculpated Jews were utterly wrecked, not a pane of glass or a morsel of woodwork being left. The door of the synagogue, through the keyhole of which Moritz said he peeped, had been saved by the police. It was replaced in position, and furniture analogous to that of the synagogue was set in the order dictated by the informer Moritz himself. The latter was now directed by the President to apply his eye to the keyhole, which, it may be mentioned, was only two and a half feet over the ground, and it was conclusively shown that it was impossible, in his present and alleged former position, for him to see the occurrence as he had described. He had stated that he had watched the crime for forty-five minutes, whereas now he was unable to support his body, so as to see through the keyhole, for more than eight minutes. As a climax, the report of the ophthalmic commissioners was now produced, declaring that Moritz was very shortsighted, and that the sight of one of his eyes was exceedingly defective. The Public Prosecutor hereupon struck Moritz's evidence out of his brief as utterly unreliable.

The speeches of counsel now commenced. Herr Eötvös demanded the acquittal of his clients, maintaining that the body found in the Theiss was that of Esther. The Public Prosecutor, in a speech full of touching dignity, agreed in this view; stated that the evidence for the prosecution, particularly that of Moritz, had utterly broken down; declared that his duty was not only to punish guilt, but to protect innocence, and called for the acquittal of the accused. A painful contrast to these calm judicial utterances was the rhapsody of Herr Szalacy, counsel for Esther's mother, who maintained that the Talmud proved that Christian blood was used for Jewish rites. He was launching forth into a denunciation of Jews in general when he was called to order by the President, who, after thirty-three days of trial, announced on the last day (31st July) that he would deliver judgment upon the whole case on the 3rd of August.

On that day this eventful history came to a judicial end. The President, speaking from the bench in the presence of a densely crowded court, and in the name of the King of Hungary (also

Emperor of Austria), declared the fifteen accused not guilty, and ordered their instant release. He exhorted them to live at peace with their Christian neighbours, but it was beyond the power of the eminent President to promise that those Christian neighbours should preserve Christian peace or charity towards them—in fact, there was here a social chasm not to be bridged over by words.

Numerous and most important psychological considerations are suggested by this trial. Was Moritz simply a perjurer of the deepest turpitude, or was he the subject of hallucinations approaching to the certainty of personal experiences? For the sake of human nature it is to be hoped that he was. Every medical jurist is familiar with such hallucinations occurring in persons otherwise quite sane, and Charcot and Bourneville give some striking examples. Dr. Legrand du Saulle, in his standard work, "Les Hysteriques," mentions the following cases:—A young woman was found by her husband in a fainting state, and covered with blood, and, on recovery, stated that she had been attacked by burglars; but on investigation this attack was found to have been purely imaginary. Another young woman was found in a railway carriage stabbed in the left side, and asserted that she had been attacked, but her wound was proved to be self-inflicted. A housemaid was found bound, gagged, and covered with bruises, and asserted that this was the work of two burglars with blackened faces. This matter was never thoroughly explained, but there were very strong reasons to show that she had contrived to tie her own hands, as well as gag and bruise herself. M. Tardieu relates the still stranger case of a young lady living at Courbevoie, who wished to excite public sympathy by passing as a victim of a political conspiracy which she pretended to have discovered. One night she was found in a state of the greatest mental perturbation at the door of her house. She could not talk, but stated in writing that she had been attacked outside by a man who had attempted to garrotte her, at the same time striking her down with a dagger. Only the lady's clothing was injured, and the body of her dress and her corset were found to be cut through, but at different levels. She tried to make out that the attempt at strangulation had caused dumbness. M. Tardieu remarked in her hearing that this infirmity rapidly disappeared when produced under circumstances of this kind. She soon managed to regain her speech, and in a short time admitted that the whole narrative had been

developed out of her own imagination. In the early part of the present year a case almost precisely similar occurred in England in relation to a lady of rank, intellect, and accomplishments, who was subsequently clearly shown to have been the victim of a hallucination. All these instances occurred in nervous, excitable females; but it is quite possible that such a hallucination might occur in a nervous, ill-disposed boy like Moritz. The constant fear of molestation, especially if based on probable grounds, is particularly liable to predispose nervous or excitable subjects to psychical impressions of this kind.

It would be interesting, if space permitted, to trace the history of the extraordinary popular delusion which was the immediate cause of the persecution of the unhappy Jews of Tisza Esslar. Utterly destitute of all foundation, this popular idea of the stealing of Christian children, for the purpose of using their blood in the Jewish sacrificial rites, has found a home in every part of Europe, and in the middle ages was an unfailing moving-spring of exhibitions of mob hatred, which frequently culminated in murder and outrage. In York the Israelites thus accused took refuge in the castle, and stood a long siege. In Toledo, in the year 1389, the authorities wished to acquire the alcana, or Jewish market, for the purpose of building the present cloisters of the cathedral, but its owners refused to sell this Naboth's vineyard. The accusation was ventilated that the Jews had crucified a little Christian boy, and used his blood for sacrifice, and the town mob quickly acquired the ground by the extermination of its owners. In a similar manner the same community were deprived of their synagogue (now known as Santa Maria la Blanca), with its exquisite Moorish arches, its roof of Lebanon cedar, its floor made of the holy soil of Zion, and its beautiful terrace overlooking the rocky gorge of the Tagus. A volume could be written upon the various unfounded persecutions of the Jews, including their massacre on the appearance of the Black Death plague in Germany (1348), and the more modern one on the first outbreak of the cholera in Naples.

On the mode of procedure of the trial there is something to be said—in fact, the observations recently made in these pages upon the Peltzer[a] case would apply to the present one. The trial occupied exactly thirty-three days; in these countries it would have probably taken about three. The speeches here would have been

[a] See Dublin Journal of Medical Science for February. Page 106.

shorter, the examination of witnesses more expeditious, and, above all, not more than one-third of the testimony would have come within the British rules of evidence. These long trials are to be deprecated, for they often amount, at least in the case of the poor, to a practical denial of justice; and yet the two Tichborne trials and the more recent Belt case would tend to show that these long trials are finding favour with our legal profession. The comparison of our domestic legal system with those of Belgium and of Hungary is, in the present instance at least, entirely favourable, for it shows that, if in our law courts there be something to amend, we have at least much to be thankful for in the superior smartness and expedition of their procedure. In all three we believe that substantial justice is done.

THE FORMATION OF PRECIPITATES IN MIXTURES OF DIFFERENT TINCTURES.

M. Pierre Vigier (*Gaz. hebdom. de méd. et de chir.*, July 13, 1883) calls attention to the precipitates that are sometimes formed in mixing tinctures. Physicians often prescribe mixtures of different tinctures to be taken by drops. Such mixtures are very often turbid, perhaps because the tinctures which compose them are made of alcohol of different strengths; perhaps because there is some chemical incompatibility in the substances mixed together. Sixty per cent. alcohol, which is nearly half water, dissolves the gummy matters of plants, which are precipitated by stronger alcohol. On the other hand, eighty or ninety per cent. alcohol dissolves the resinous matters, which are precipitated by weaker alcohol. In case a precipitate forms in any given case, the liquid can, of course, be filtered, but it is often not known what remains upon the filter. It is well, therefore, in mixing tinctures, to put together such only as are made with alcohol of the same strength. However, even this precaution will not always prevent the formation of precipitates. For instance, if equal quantities of the tinctures of calumba, of gentian, of cinchona, and of the bitter tincture of Baumé be mixed together, the resulting compound is turbid. It is found, by combining these tinctures in various ways, that the precipitate results from the reaction of the tinctures of calumba and of cinchona upon each other. The viscous material contained in the tincture of calumba is thrown down by the soluble principles of the cinchona. This precipitation may not destroy the value of the filtered mixture; nevertheless, it is better not to prescribe the two tinctures together.—*N. Y. Med. Jour.*

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Transactions of the Academy of Medicine in Ireland. Vol. I. Edited by WILLIAM THOMSON, M.A., F.R.C.S., General Secretary; Surgeon to the Richmond Hospital, Dublin. Dublin: Fannin & Co. 1883. Pp. 382.

THE fusion of the Medical Societies of Dublin into an Academy of Medicine has proved a success. The first meeting of the new Association was held in December, and from that time to May the Sections met regularly. Over 200 Fellows are on the rolls, besides 21 Members and 22 Student Associates; and this goodly volume of "Transactions" has been published. We gather from the Preface that there is still a little friction at some of the bearings of the new machine, which will soon wear away, we expect, and we hope to see an increase in the numbers of Members and of Student Associates in the coming session; but the new institution is, we repeat, a success, and the promoters of the fusion deserve the thanks and congratulations of the profession in Ireland. This first volume of "Transactions" is most creditable, not only to the Academy, but also to the editor and the printer. As to the arrangement of the papers, we venture to suggest that it would be more convenient if those of each Section were brought together in the volume instead of being scattered through it according to dates of reading. Some of the papers are mere "cases," too, and would be more suitable for publication in a weekly or a monthly journal than in a permanent volume of this kind. We shall briefly notice a few of the papers read before each Section, in the order which, as it appears to us, might with advantage be adopted in future volumes of "Transactions"—namely, Public Health, Medicine, Anatomy and Physiology, Surgery, Obstetrics, and Pathology.

Only four papers on sanitary subjects appear, but they are all interesting and valuable. Dr. Grimshaw calls attention (p. 95) to two points of great importance in the preparation of sanitary

statistics—the fallacious method in which population is usually estimated between census periods, and the defective classification of employments. "The usual method," he says, "of striking death-rates is to estimate the population according to the increase or decrease between two census periods, thus fixing an estimated population for the middle of the year, and calculating the death-rate for the whole year and each part of the year according to the standard. Now, taking very large populations over very large areas, with varying conditions in different parts of such areas, this is probably a fair method of proceeding, especially where there is an increasing population; but, on the other hand, if the population is a comparatively small one—say a quarter of a million or half a million in an increasing town—or if the population of the whole country (as in Ireland) is decreasing, the estimate may be very fallacious." Thus, in the case of Glasgow, as Dr. Russell pointed out, the population, as estimated by himself for 1881, exceeded by 26,608, and, as estimated by the Registrar-General of Scotland, by 89,851, the actual population; so that the published death-rate of the city had for years been lower than the real one. A table giving, for 20 English towns, the population in the middle of 1881, as estimated in the usual way from the increase between 1861 and 1871 and that determined by actual enumeration, shows that in six the actuals exceeded the estimates—in London by as much as 124,589—and in 14 fell below them. Similarly, in the eight provincial towns of Scotland the estimated population exceeded the actual by 110,980 in a total of 1,206,057. In Ireland the estimated population in the middle of 1881 was 5,294,436, the actual 5,159,839—difference, 2·6 per cent. Dr. Grimshaw's conclusion is that "none of the methods at present in use is sufficiently reliable for the purpose of health statistics, the least fallacious being the estimate founded on the average numbers of presumed occupants of inhabited houses"—that is, in Dr. Russell's words, "to ascertain from the number of houses inhabited by the census population the average number of inhabitants per house, and then in each succeeding inter-census year to apply this average as a multiplier to the number of inhabited houses for that year."

The second point of Dr. Grimshaw's paper is "the great importance, from a sanitary point of view, of having the population arranged by social classes." This was done in the Irish Census of 1881, and the death-rate of carpenters, for example, with those dependent on them, can be ascertained. Thus it was

seen that while in a certain period the mean death-rate in Dublin was 30·6, the corresponding rates for the five classes into which the population is divided were as follows:—Professional and independent class, 22·45; middle class, 25·4; artisan class and petty shopkeepers, 26·1; general service class and inmates of workhouses combined, 37·2.

Dr. Cameron contributes a paper (p. 214) on the "Relation of Consanguineous Marriages to Deaf-mutism," in which a good deal of evidence on both sides of an unsettled question is collected. His trumpet gives rather an uncertain sound; but, on the whole, those who feel impelled to marry their cousins may take courage. "The effects of such unions cannot be largely injurious, seeing that, according to my statistics, there must be about 55,000 children of first cousins in Ireland, of whom only 135, 1 in every 407·4, or 0·0024 per cent., are dumb, or deaf and dumb."

We fear Dr. Wright's plan for the disposal of sewage in Irish country villages (p. 223) is too elaborate and expensive for our present Boards of Guardians. The Irish villager is a long way yet from cemented cesspools, glazed earthenware pipes and dipstone traps; and we are almost ashamed to confess that, in our opinion, that "certain sunny ditch" mentioned in the text has its advantages—is, for one thing, less likely to propagate disease than the "common cesspool in a grass field." But Dr. Wright's paper contains some valuable hints, and will repay perusal. We must, however, protest against his confusion of dry-earth conservancy with Moule's system. The former can be carried out most satisfactorily and efficiently without "closets," and with no more expensive machinery than a deal box to hold earth, and a wooden ladle to apply it.

There are ten medical papers in the volume. The first (p. 25), on the "Causation of Left-side Pain," by Dr. Wallace Beatty, seems to have strayed out of the Obstetrical Section, to which it more properly belongs. In many cases, Dr. Beatty thinks, this perplexing symptom depends upon fæcal accumulation, and yields to purgation. It is due to the drag upon the pleuro-colic ligament by the weight of accumulated fæces. To the obvious objection, "Why is left-side pain, so common in women, so rare in men?" he replies:—"First fæcal accumulation to any great extent is rare in men; and, secondly, women are much more liable to affections such as chlorosis and anæmia, in which the excitability of the nervous system is much exalted. Pain over lower left ribs does

occur in men in consequence of fæcal impaction." On page 70 we find a case of empyema treated by paracentesis, aspiration, and injection. Dr. Hayes' paper is valuable on account of his trial of four antiseptic lotions for washing out the cavity of the pleura. These were a 1 per cent. solution, or dilution, of eucalyptus oil, a carbolic acid solution of 2 grains to the ounce, salicylic acid of 1 per cent., and boracic acid of 2 per cent. strength. The eucalyptus was a failure, the evening temperature during its employment falling once only below 99°. The temperature never rose to 99° during the use of the carbolic acid. The other two washes were discontinued as unsatisfactory after three days' trial. They appeared to be ineffective rather than actively irritating like the eucalyptus. Dr. Hayes concludes that "in a ½ per cent. solution of carbolic acid we have an irrigating fluid which can be used in the treatment of any large pus-secreting cavity not only with safety but with benefit to the patient." In a paper on "Bleeders" (p. 182), Dr. Frazer records two cases of cerebral hæmorrhage occurring in subjects affected with hæmophilia. He mentions also a case of hæmorrhage from the kidneys, due to this constitutional peculiarity, relieved by cupping over the loins; and followed by pulmonary hæmorrhage, similarly treated with success. Lastly, Professor W. Stokes discusses the treatment of locomotor ataxy—which, for some unexplained reason, he prefers to call "tabes dorsalis"—by nerve-stretching (p. 239). "That nerve-stretching has in many cases," he says, "been attended with benefit, which in some few has been permanent, cannot be denied." "Relief from some of the most distressing symptoms in ataxy may, if the operation be skilfully performed, and at a comparatively early period of the development of the disease, be reasonably anticipated." In two cases occurring in the author's hospital practice the results of the procedure were fairly satisfactory. In one, "though there was no improvement in locomotive power, no return of patellar reflex, and no change in his power of walking in the dark or with eyes closed, yet still, in three of the characteristic symptoms of the disease, there was a very marked change observed. The first of these was a restoration of plantar sensibility; the second, a marked diminution both in frequency and intensity of the lightning pains; and, lastly, the vesical irritability ceased almost entirely"—for six weeks. In the other case, two months after the operation, the patient continued free from the urinary and vesical symptoms, and also from the characteristic pains. With these cases as a text,

Mr. Stokes discusses nerve-stretching in general, the method of operating, and the results; and the paper is of great value.

Surgery contributes eleven papers to the volume. Mr. O'Reilly, of Trim, describes (p. 8) a case of lumbar nephrectomy for the removal of a tuberculous kidney. Neither his case nor the statistics which he gives are encouraging. Mr. Knott's case of dissecting aneurism of the aorta (p. 13) belongs to pathology rather than to surgery, as the specimen was found on the dissecting-table; but it forms a convenient peg on which to hang a short essay on aneurisms. Mr. Kilgarriff's case of successful trephining for abscess of the brain (p. 22), following a punctured fracture of the occipital bone, is interesting; and Dr. Wheeler contributes (p. 63) a valuable paper on "Trephining in Mastoid and Tympanic Disease." Two successful cases are detailed, and the history of the operation is briefly sketched. Dr. Franks' paper on "Spontaneous Dislocation of the Hip" (p. 161) is an excellent *résumé* of the most important facts, founded on two cases of this rare lesion; and Mr. Barton (p. 307) defends the operation of excision of the hip against some who "seem to think that the success gained by excision of the hip is at best but a poor one, being barely an escape from death to life-long deformity and debility." His *pièce de resistance* is a youth "who had his right hip excised when he was eleven years old. Now, when eighteen, he not only walks and runs, but can hop on his right leg, the false joint enjoying flexion, extension, abduction, adduction, rotation, and circumduction. He is in perfect health, and supports himself and his sisters as a writing clerk, walking daily a mile to, and same from, his business with perfect ease." Mr. Barton reported seven cases of this operation to the Medical Congress of 1881, of which only one had then finally recovered. To these he adds two in the present paper—girls aged respectively twelve and fourteen. A year had elapsed since the operation in one case, and six months in the other. They were far enough from perfect health, but life had certainly been prolonged, and unquestionable relief from suffering afforded. The author attributes his success in these cases to his "open" method of dressing, which is fully described. Dr. Stack's paper on "Replantation and Transplantation of Teeth" (p. 314) will be read with great interest by dentists. A table of 31 cases is attached, and photo-micrographic illustrations (which we should like better if they had been printed in Dublin) add to the value of the essay.

In the Obstetrical Section Dr. Neville read a paper on the

"Breaking Strain of Umbilical Cords" (p. 41). The subject is important mainly in connexion with the causation of uterine inversion, which many obstetricians, in spite of Dr. Atthill's strongly-pronounced dissent, still attribute to dragging at the funis in order to dislodge the placenta. In 10 per cent. of cases the tensile strength of the cord was found to be "twenty pounds or more"—sufficient to enable an impatient midwife to pull down the fundus of a flaccid uterus without rupture. Like Dr. Neville, we "can see no reason for doubting that improper tractions might readily result in inversion." Dr. Atthill (p. 130) contributes the result of his experience of "so-called puerperal fever" during his Mastership of the Rotunda Hospital. He starts with the statement of "three points established beyond all doubt"—(1) that there is no such disease as "puerperal fever," specific, well-defined, and communicable by its proper contagium; (2) that puerperal women are liable to "inoculation" with septic matter introduced into the vagina, resulting in the production of one of the forms of metria; (3) that they are capable of self-inoculation by poisonous matter generated within their own bodies. To these propositions he adds a fourth—"that septicæmia, occurring in a puerperal woman, is not capable of being communicated to another puerperal patient by any means other than the direct transfer of the infectious matter to some portion of the mucous membrane lining the genital track." Dr. Atthill's paper, though, or perhaps because, provocative of controversy, is one of the most valuable in the volume. We transcribe the concluding sentences:—

"The vast majority of cases of so-called puerperal fever are the result of septic poisoning, which form of disease is incapable of being propagated by the medium of the lungs. I believe—(*a*) that a disease of a highly infectious nature, differing essentially in its symptoms and course from the result of septic poisoning, and capable of being propagated in the same manner as other zymotic diseases, occurs from time to time among puerperal women; (*b*) that the disease originates from the introduction into the system of a puerperal woman of the infection of some well-known zymotic disease, such as erysipelas, scarlatina, typhus, and probably typhoid fever, the action of the infection being modified by the peculiar state of the system and of the blood which exists in puerperal women, and that it therefore develops in them an apparently totally different disease; (*c*) that the disease thus originating can be stamped out with as great ease and by the same means as are known to be efficacious in the case of ordinary zymotic disease."

We must take exception to Dr. Madden's statement on the first page (p. 248) of his paper on "Mental and Nervous Disorders Peculiar to Women," that "it is unquestionable that uterine pathology is very generally neglected in the study of female nervous diseases." It seems to us that with a large proportion of practitioners, and with almost all obstetric specialists, there is a tendency to lay the blame of every pathological condition in the female—from mania down to corns—upon the uterus, and that the tendency is strongest where nervous affections are to be accounted for. Nor can we think that the life of the human female is so miserable as is implied in the assertion that "few women while menstruating can be said to enjoy the *mens sana in corpore sano* in their [*sic*] integrity." There are some unintentionally amusing bits in the paper, as well as some useful hints, and it is, on the whole, worth reading. The Latin couplet with which it concludes contains two of the half dozen misprints which we detected in the entire volume.

The Pathological Section secured, as might be expected, the lion's share of contributions—eighteen in number. Mr. Stokes (p. 88) makes a case of his own the test of a valuable—surgical rather than pathological—paper on "Penetrating Wounds of the Bladder." He cites other interesting cases similar to his own, and discusses the question "whether the vesical wound or the extravasated urine plays the chief *rôle* in determining the peritoneal inflammation." As to practice he lays down "that in cases where either rupture or wound penetration is recognised, steps should be at once taken, unless there should be some distinct contra-indication, to secure a free exit for the urine before the changes take place which, as a rule, lead to such disastrous consequences." We conclude our imperfect review of this interesting volume by recommending to the notice of our readers Mr. Abraham's "Notes on the Blood Vessels of New Growths" (p. 145), and Mr. Davison's paper (p. 267) on the "Influence of Fractures on the Growth of Bone." In the latter, two conclusions, important in practice, are drawn—that, when practicable, fractures should be so put up as to allow the patient to move about freely; and that, in young people, shortening, following fracture, will probably be remedied by natural processes.

The Transactions of the Medico-Chirurgical Society of Edinburgh. Vol. II. New Series. Edinburgh: Oliver & Boyd. 1883. Pp. 128.

THIS Volume—the second that the Society has published of its communications in a collected form—contains several concisely-written papers of interest. Dr. Alexander James has given the result of his investigations into ankle clonus in relation to the height of the individual. Starting with the theory that the difference in the rapidity of the ankle, knee, elbow, and head, clonus depends on the difference in the distance of the muscles concerned from their nerve centre in the cord, one would expect to find differences in the rapidity of clonus in individuals of different heights; and as the height of the individual depends mainly on the length of his legs, this difference should be best marked in the ankle clonus. Theoretically, supposing that the nerve impulse travels at the rate of 120 feet per second, that the latent period of muscle contraction is $\frac{1}{50}$ second, and that the time required for a reflex act is $\frac{10}{100}$ second, the rapidity of ankle clonus in a person 6 feet high would be 5·8 per second, whilst that of one 5 feet in height would be 6·5 per second. Experiments were made upon 10 persons whose height varied from 6 feet to 6 feet 4 inches, and the average clonus was found to be 5·84 per second; while in 29 persons whose height ranged from 5 feet 6 inches to 5 feet 11 inches the average was 6·48 per second. In 9 cases of still lower stature the average was 6·9 per second. Dr. James's hypothesis is therefore borne out, that *cæteris paribus* the rapidity of the clonus bears an inverse proportion to the height of the individual. It also confirms the view that the condition is an entirely reflex one, and not, as Gowers supposes, a combination of nervous and muscular action.

Dr. Allan Jamieson details several cases of diphtheritic sore throat which he had successfully treated with salicylate of soda internally and by painting the affected parts with a saturated solution of boro-glyceride in glycerine; in the discussion which ensued the use of gargles was generally condemned as disturbing inflamed parts which should be left at rest.

Mr. Joseph Bell describes and illustrates a form of loss of memory that occasionally follows cranial injuries. In a certain number of injuries to the head, after recovery from the early symptoms, it is found that the victim has, much to his own surprise, forgotten entirely, not the accident itself and the succeeding cir-

cumstances only, but a certain length of time, varying in different cases from minutes up to hours and even days, with all its actions before the accident happened. This phenomenon is sometimes erroneously put down to intoxication before the injury. Several cases are recorded where striking events that the sufferer was engaged in a few hours before his accident could not be recalled. Mr. Savory in a note to the *Lancet* confirms these observations, and mentions several similar cases. Mr. Bell argues that a shake or laceration of the brain may prevent record, though the mere fact of the patient being made unconscious will not spoil record. In making experiments upon patients while putting them under anæsthetics he has found that almost always intelligent patients can recall with accuracy the last words spoken before unconsciousness; he also added that students who had to cram anything particularly well for an examination—say the Natural Orders—knew that the best way was to get them off the last thing before going to bed and fall asleep immediately. They had them almost at their fingers' ends in the morning; but if they allowed anything to intervene between the cramming and the sleeping they forgot in proportion.

Mr. Symington brought forward a specimen of a cervical rib which was of surgical interest, as it terminated in a well-marked bony prominence above the clavicle. It was connected with the seventh cervical vertebra, and showed a head, neck, tubercle, and shaft, and this was connected by a process of bone with the first thoracic vertebra. Sometimes these cervical ribs, by forcing up the vessel, simulate aneurism.

Mr. Joseph Bell also records a case of a curious lesion of sensory nerves. A cabman, aged thirty-eight, had sustained ten years ago a severe injury by being thrown from his horse. He was at first completely paralysed below the middle of his back. After many months of suffering he began to improve, and his present condition was a remarkable one. He had a considerable amount of muscular power, but over a great part of the lower limbs he had lost all sensory power, so that some time ago a horse crushed his foot destroying several of the bones, without his knowing anything of it till his attention was drawn to the fact by his comrades. The bones he removed himself, after inflammation and suppuration, without pain. He came under Mr. Bell's care for ulcers on the front of both legs, which were caused in a curious way—not having sensation in his feet, he sometimes failed to step on the dickey properly and barked

his shins. All over the feet and back of the leg and thigh he was devoid of sensation. Sensation to heat and cold was present, but somewhat diminished. Plantar reflex and ankle clonus were absent.

Dr. Cadell recommends the use of chromic acid for the removal of warts on the genitals. He employs for ordinary cases a solution of one hundred grains of the acid to an ounce of water, and applies it by cotton wool rolled round an artery forceps. He believes this to be less painful than any other escharotic, and to be quite as effectual as ablation by the knife or scissors.

A Guide to the Practical Examination of Urine. By JAMES TYSON, M.D.; Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, &c. Fourth Edition. Revised and Corrected. With Coloured Plates and Wood Engravings. Philadelphia: P. Blakiston, Son, & Co. 1883. 8vo. Pp. 196.

ON more than one occasion we have noticed with approval Dr. Tyson's admirable "Guide to the Examination of Urine."[a] The task of reviewing the present—the fourth—edition is, therefore, an easy one. In the preface the author explains that the additions are mainly intended to correct errors and to secure greater accuracy and completeness, and these objects are to a certain extent attained.

The author has not a high opinion of modern tests for albumen in urine—mention of which he dismisses in a few words on page 40. He adheres with marked conservatism to the old methods, and observes, that "under all ordinary circumstances by far the most distinctive test for small quantities of albumen is that form of the nitric acid test described as Heller's, and in the majority of cases this test, carefully carried out, even in the hands of the inexperienced, will exhibit the presence of albumen when it would have been overlooked in the ordinary mode of application of the heat and nitric acid test."

The "Guide" is brought out in a very attractive form by Messrs. P. Blakiston, Son, & Co., of Philadelphia; and we may add that the illustrations are much above the average in point of accuracy and finish.

[a] See Dubl. Jour. of Med. Science. Vol. LIX., page 527. 1875. Vol. LXX., page 43. 1880.

Politzer's Text-Book of the Diseases of the Ear and adjacent Organs. Translated by J. PATTERSON CASSELLS, M.D. London: Baillière, Tindall, & Cox. 1883.

THIS work contains nearly 800 octavo pages and 257 illustrations, and is altogether the largest and most important work on aural surgery that has as yet been published in English. While we may therefore congratulate both the author and the translator upon the valuable addition they have made to our otological literature, it is extremely disappointing to the reader to reflect how much more might have been effected with the expenditure of time and learning that has been bestowed upon this bulky volume, and the impression left by its perusal is that *the* text-book of otology has yet to be written. It is remarkable how unfavourably otology contrasts with its sister specialty—ophthalmology, in the matter of text-books and year-books. There is no such thing as an otological year-book, and no text-book that can compare with Græfe and Samisch's "Handbuch." It is true that the latter is the work of many writers, but the literature of otology has not yet reached that point at which it would be impossible for a single individual, especially one of Prof. Politzer's learning and ability, to write a work that would render it unnecessary for a student to hunt back in the older literature in order to be abreast with the aural knowledge of his age. The production of a work of this description and the publication of a complete year-book would be useful employments for the otologists of Great Britain and Ireland now about to be united into a society with presidents, vice-presidents, councillors, and a handsome annual volume of Transactions doomed to lie unread on the top shelves of the bookcases of the original members.

Before entering upon the subject-matter of the treatise, we desire to call attention to the extremely unsatisfactory character of the bibliographical references. When given at all they are relegated to small type footnotes, where the names of authors, the titles of papers, and the dates of publication are all run on in line without any attempt at classification, either chronological or alphabetical. In this connexion it may be mentioned that both the index and the table of contents are shamefully defective. The latter contains only twenty-six entries in a work of nearly 800 pages. As an example of its deficiencies the 100 pages commencing on page 77 are represented by only two items in the

table of contents, while a mere glance at the text shows more than twenty-five separate headings of subjects. There is no excuse for this condition of affairs, for the original possesses a very good table of contents. The index is even worse, and on this subject we write feelingly, for a good index is a reviewer's sheet anchor, who without one is almost compelled to read the book he has to review. This index contains no mention of the names of such authorities as Voltolini, von Tröltsch, Toynbee, Kramer, Knapp, Hinton, and hosts of other celebrated aurists, who, so far as this index is concerned, might have never existed, and it must be remembered that no list of otological literature is given to supplement this defect in the index. Then, again, the practitioner has no means of knowing what are the aural complications of measles, scarlatina, typhus, typhoid, mumps, or diphtheria without wading through the whole 800 pages. Syphilis is only assigned to diseases of the labyrinth, which indeed seems to be pretty nearly Politzer's opinion in the text, and no mention is made of either coughing, or sneezing, or epilepsy in connexion with ear disease. The first thing to be done in a second edition will be to make a respectable index and table of contents.

The translation is generally excellent, rendering Prof. Politzer's very lucid German into equally lucid English, but mistakes do occur here and there. An extraordinary error, for instance, is to be found in the footnote, page 95, where "Gekreuzte Doppelbilder" is translated "a transverse double view," being neither sense nor English. If Dr. Cassells had shown this passage to the oculist to whom he dedicates his translation a glaring error would have been avoided.

The treatise is not pathological merely, but contains chapters somewhat too brief upon the anatomy and physiology of the organ of hearing, which is treated of in two divisions—(*a*) sound-conducting apparatus, (*b*) sound-perceiving apparatus. The anatomical part naturally contains few novelties, but attention may be directed to Pollak's observations upon the inclination of the infant's membrana tympani. This has generally been described as nearly horizontal, but Dr. Pollak has proved by numerous measurements that there is no perceptible difference between the inclination of the membrane in the newly born and in the adult.

The classification of inflammatory affections of the middle ear adopted is that familiar to aurists, into two great groups—(1) suppurative with perforation; (2) non-suppurative without per-

foration of the drumhead, which may be either exudatory or sclerotising.

The pathological changes occurring in the diseased tympanum are very fully described, some 12 pages being devoted to the subject, after which comes a long dissertation upon the objective and subjective examination of the tympanum, with valuable observations upon the different methods of injecting air into the middle ear. This part of the work is disfigured by frequent polemical attacks upon all methods of insufflation not specially invented by the author, who seems to resemble that famous Jew who exclaimed, "Can any good thing come out of Nazareth?" and to locate most other aurists in that unhappy village. Indeed all parts of the work exhibit this defect. Instead of decent and modest references in footnotes, the text is found continually interlarded with expressions of this kind—"Which I was the first to prove," "I was the first to furnish experimental proof," "I was the first to state," "I was the first to observe," "the advantages of my ——," "the value of my method," and so on *ad nauseam*.

Cannot Prof. Politzer trust somewhat to posterity for the vindication of his fame, and leave room in his big text-book for more important matter than these wretched claims to priority in matters which are mostly of the most trivial character?

It would be impossible in the limits assigned to this article to deal with more than a very minute number of the interesting points treated of in the work under consideration. A few here and there may be alluded to.

Caries of the Mastoid produced by Inflation.—Politzer, as might be anticipated, accepts Michael's experiments on this point as fully refuting Gruber's theory that occasionally pus might be propelled into the mastoid cells during inflation, and so cause caries.

Diagnosis of Tubal Obstruction.—Politzer recommends Valsalva's experiment as a useful means of diagnosis, but considers Toynbee's unsatisfactory, both when the diagnostic tube is used, and when the membrane is inspected, holding that the mere change in the position of the Eustachian tube produced by the act of deglutition is of itself sufficient to cause a movement of a pathologically altered membrane without the tube having been opened in the process.

Auscultation of the mastoid region during the act of catheterisation of the tube is a point which has not in this country received the attention it deserves, if Michael's conclusions are to be depended

upon. They are as follows:—If the normal blowing sound is absent in a case where the Eustachian tube is fairly pervious, and there is no perforation of the tympanum, we may conclude that disease of the mastoid cells is present.

Injection of Fluid into the Tympanum.—Politzer strongly condemns the proposal of Gruber and Saemann to use the method of Politzerisation for the purpose of injecting fluids into the middle ear. No good effects are observed to follow it, and its results are often most disastrous, not alone to the ear under treatment, but also to the other possibly sound ear.

Test for Tone Perception.—Politzer calls attention to Arthur Hartmann's proposal to make use of the telephone as a test for the power of perception for different tones of the musical scale. This method was demonstrated in the Physiological Society of Berlin in 1878, and it is curious that nothing seems since to have come of it.

Testing Conduction of Sound through the Cranial Bones.—A few words must be said on this important subject. Politzer lays stress upon the fact that the power of perception of the ticking of a watch in this manner diminishes in old age, not through decreased conductivity of the bones, but through senile degeneration of the auditory nerve. This change occurs normally about the fiftieth year, and should be borne in mind when examining patients over that age.

The certainty of this method of diagnosis is very far from absolute. Occasionally it is true that in a one-sided affection there is a sharply defined, almost linear boundary in the middle line of the parietal and frontal bones, where the perception of the normal side suddenly ceases as soon as the watch has reached the other side, but this is uncommon. Politzer seems to lay more stress upon the prognostic value of this test in middle-ear disease than on its value in the differential diagnosis of middle-ear and labyrinthine affections. He asserts that there are many exceptions to the rule that the tuning-fork is heard better through the cranial bones with the affected ear in diseases of the external and middle ear, though he does consider that these exceptions by no means detract from the value of this instrument as a test. If the tuning-fork in a given case is heard better from the vertex with the affected ear, we may infer disease of the sound-conducting apparatus, and this is the only unqualified rule allowed in the matter—all others are liable to exceptions.

Of Lucæ's interference otoscope Politzer speaks slightingly, as of only very limited value in diagnosis. Still in a text-book for students and practitioners it would have been expected that a description would have been given of the instrument, and some allusion made to the ingenious application of scientific principles on which it depends.

Pressure upon the Mastoid Process.—In discussing subjective symptoms, Politzer notices and confirms Türck's exceedingly interesting observations upon the alterations in subjective noises produced by pressure upon the mastoid process, or upon the first cervical vertebra. Both in cases of decided middle-ear disease, and in cases where the diagnosis between tympanic and labyrinthine disease was uncertain, Politzer has observed a decrease, and less frequently an increase, in tinnitus during pressure upon the mastoid, and he has also observed changes in the intensity of the tinnitus produced by closing the external meatus with the finger. The increase of intensity in these latter cases can be explained partly by the change of labyrinthine pressure, and partly by the greater prominence given to the subjective sensations by excluding external objective noises, but there seems no explanation as yet of the action of pressure on the mastoid or on the first cervical vertebra. Possibly these may have been the cases which induced the older aurists to have such frequent recourse to counter-irritation by blisters in these regions.

Another remarkable and unexplained phenomenon is noticed by Prof. Politzer—it is that in people suffering from partial one-sided deafness closure of the normal ear sometimes produces a subjective noise in the diseased ear, which is frequently of great intensity, and disappears again immediately on opening the normal ear. The hyperæsthesia acoustica which is occasionally observed in cases of complete deafness, Politzer accounts for by the supposition that the acoustic nerves contain fibres whose irritation does not give rise to perception of sound, but to a peculiar sense of pain.

Paracusis loci, according to Prof. Politzer's observations, occurs most frequently among patients suffering from obstruction to the conduction of sound without accompanying labyrinthine disease.

Paracusis Willisii is found, according to Politzer, almost exclusively in the incurable forms of the affections of the middle ear. v. Tröltsch's explanation of the latter condition that the loud noises press the membrane inwards, and throw the ossicula into distinct vibrations, whereby they approximate to each other, differ

somewhat from Politzer's, who has chiefly observed Willis' phenomenon in adhesive inflammation of the tympanum, and attributes it to concussion of the ossicula rendering them more serviceable for conduction by its effect in destroying the equipoise caused by the rigidity of the articulations. This view he considers proved by some observations he has made in cases of deafness due to chronic suppuration of the middle ear. He found in almost two-thirds of these cases the hearing power more or less markedly improved by placing a low-toned vibrating tuning-fork upon the vertex.

Treatment of Chronic Myringitis.—Politzer recommends the instillation of sulphate of zinc 1 per cent., to be followed, if no improvement, by acetate of lead 1 per cent., and if that fails, by nitrate of silver 8 per cent. Granular formations on the membrane he cauterises with liq. ferri perchloridi in preference to nitrate of silver, but prefers the galvanic cautery to either method.

Painful Affections of the Middle Ear.—Politzer approves of leeches applied, as advised by v. Tröltsch and Wilde, to the skin close in front of the tragus, and condemns the old procedure of applying them indiscriminately to the mastoid region in such cases. He also disapproves of inflation so long as great pain exists, and only recommends paracentesis in those cases where the appearance of the membrana tympani indicates the near approach of perforation by a yellowish-green discoloration occurring at the most prominent point, or the appearance of a livid red swelling on the membrane, or the persistence of severe pain in spite of appropriate treatment.

Injection of the Vessels of the Drumhead after Inflation.—The explanation given by Prof. Politzer of this phenomenon, so frequently seen in cases of Eustachian obstruction, is exceedingly doubtful. It is that the rapid change in position of the membrane causes a sort of bend in it which produces a temporary stagnation in the veins of the handle. Is it not far more probable that this injection is caused by the sudden relief from atmospheric pressure which must occur when the tympanum is again brought into communication with the external air?

The loud subjective sensation like the report of a pistol in the ear, which accompanies those curious sudden fluctuations in the power of hearing in middle-ear disease, is explained by Politzer as due to the abrupt equalisation of the air-pressure between the tympanic cavity and the external air. This explanation can hardly hold good, for it is very rare to have such a noise complained of when

the tympanum is inflated either by Politzer's method, or with the catheter, and the equalisation of the pressure must be quite as abrupt in these cases as it is possible for it to be. The unsatisfactory character of this explanation seems to have occurred to Prof. Politzer himself, for he has to account for the occurrence of the phenomenon in cases where the tympanum has been already repeatedly inflated during treatment, by supposing that a sudden motion of the ossicles may also be the cause. It seems more probable to hold with Jago (whose view indeed is not even alluded to) that a change in the position of a piece of inspissated mucus may occasion this noise, or to assume, as is perhaps more usually done, that it may be due to a sudden opening of the adherent walls of the tube in the neighbourhood of the tympanum.

Paracentesis of the Membrana Tympani.—Prof. Politzer performs this operation when, after several days' application of the ordinary methods of treatment, no decrease is observed in an intra-tympanic exudation, and also, when no exudation is demonstrable, if he finds that the improvement in hearing produced by inflation disappears again almost entirely in one or two days. To remove an exudation without paracentesis, he advocates the method invented by himself of Politzerising with the patient's head inclined well forward, and somewhat towards the unaffected side, in which position the pharyngeal mouth of the tube points directly downwards, and the osteum tympanicum tubæ directly upwards. If this fails, he has recourse to paracentesis in preference to using Weber Liel's elastic tympanic catheter, of which he does not seem to have a high opinion. The direction of the incision in paracentesis he considers unimportant, but the position should be either in the posterior-inferior or the anterior-inferior quadrant, unless there is much bulging, when the most prominent place should be selected, or unless there is an abnormal curvature inwards, when the tightly-stretched posterior fold should be operated on.

Rarification of the Air in the External Meatus.—Politzer speaks favourably of the good effects produced by this treatment, whether the rarification is caused suddenly by an india-rubber balloon during the act of Politzerisation, or gradually by his device of hermetically sealing the external meatus. He also continues to practice repeated incisions into the membrane in cases where it is in a flaccid and atrophic condition.

Adenoid Vegetations in the Pharynx.—Considerable space is given to this affection and the means employed for its removal, several

methods being described. It is not easy to make out which is the method most approved of by Prof. Politzer, but he speaks favourably of cauterisation with nitrate of silver, as well as mentioning Meyer's knife, Justis' spoon, Hartmann's and Störks' snares, &c. In the matter of gargling he approves of v. Tröltsch's method as more efficacious than the ordinary plan.

The apparent enlargement of the malleus handle, so frequently observed in adhesive catarrh (c. sicca) of the middle ear, Politzer attributes not to increased size of the bone, but to a granular degeneration of the small cartilage cells near the handle.

Tinnitus.—Prof. Politzer speaks not unfavourably of the use of counter-irritants and vesicants in the treatment of tinnitus—a method of treatment that has fallen into much disrepute of late years, probably from its indiscriminate and almost universal application in all cases of ear disease. It is even yet not infrequent for the aurist in this country to meet with cases of polypus, and even of ceruminous collections, which have been subjected to this treatment! Internal remedies for tinnitus are not much approved of by Politzer. Bromide of potassium he mentions with faint praise, and the so-much lauded hydrobromic acid has proved useless in his hands.

The passage of bougies in treating strictures of the Eustachian tube has not, so far as we are aware, been much practised in this country. On the Continent it has been in use for some time back, and of late has become quite the fashion. It is a method of treatment only to be used in cases of undoubted stricture, and in such cases it occasionally leads to permanently good results, but Politzer admits that, on the whole, the results are not very good, and when they are, he considers the stricture has been most probably due to a simple swelling of the tube, and not to the formation of connective tissue.

Prof. Politzer's opinion upon the comparative merits of the much debated methods of *dry* and *moist treatment in suppurative middle-ear disease* is that the former is preferable in the acute and the latter in the chronic cases. In the treatment of granular suppuration of the middle ear he still adheres to the use of alcohol.

Prof. Politzer acknowledges that all the attempts hitherto made to keep an *artificial opening in the drumhead* permanently open have failed. The best method of making the opening he considers to be the galvano-cautery, as proposed by Voltolini.

Tenotomy of the Tensor Tympani.—This subject is treated of at

great length, but this comes with a better grace from Politzer than from the author of an Irish text-book, who acknowledges, after an elaborate description of the method of operating, that he has never performed the operation! The indications for the operation are very doubtful. Politzer's opinion is that we have as yet no sign from which we can with certainty infer retraction of the tensor tympani, and that the operation itself is of but trifling use, and may sometimes have a deleterious effect upon the functions of hearing.

It will not cause astonishment in this country to learn that in acute suppuration of the tympanum Prof. Politzer has had such good results from *powdered boracic acid* that he uses it almost exclusively in the affection. This bears out the conclusions of most aurists who have adopted the treatment.

The chapter on chronic purulent inflammation of the middle ear contains a large number of excellent engravings of the different appearances of the membrane and tympanum, illustrating the pathology of this disease. In this chronic form he considers the results of the dry method of treatment are not so favourable as in the acute variety, and in it he relies more frequently upon the alcoholic treatment.

He does not consider any one form of the *artificial membrana tympani* as applicable to all cases, but selects that most suitable to the individual case. The theory of the mode of action of these so-called membranes which Politzer adopts is a novel one of Knapp's, that they press upon the short process of the malleus, and accordingly relax the pressure of the chain of ossicles inwards. This is opposed to the current theory proposed by Erhard, that the artificial membrane presses the ossicula inwards, and keeps them in better contact.

A large number of different operations are described for the cure or alleviation of deafness after chronic suppuration, but Politzer has to acknowledge that aurists are only feeling their way experimentally in this direction at present, and he certainly gives them little assistance in their quest. The treatise contains no statistics of the results of different operations, and the general conclusion to be inferred is that anyone may do any operation that comes into his head.

Inflammation of the Mastoid Cells.—The portion of the work devoted to this disease and its treatment deserves careful perusal. Besides applications of cold through Leiter's cooling apparatus and

local blood-letting, Politzer lays most stress upon thorough washing out of the tympanum, both through the external meatus and through the Eustachian catheter. If these means fail, he has recourse to Wilde's post-auricular incision, and finally to perforation of the mastoid, although he considers that much still remains to be learned before the indications for this operation can be placed on a rational basis. However, in his own work he gives indications enough to induce a surgeon to perform this operation much more frequently than, we fear, it is commonly practised, and he details most carefully the various steps to be taken in carrying out the operation, which, he thinks, should not be undertaken by anyone who has not performed it some forty or fifty times on the dead subject. This chapter should certainly be carefully studied by anyone about to perform the operation in question.

Exostoses.—It is curious that in the list of means advocated for removing bony growths in the external meatus, Politzer omits entirely that of electrolytic action, as used by Dr. Clark, of Bristol, and described by Hinton in his "Questions of Aural Surgery," 1874.

Space forbids us to enter upon the anatomy and physiology of the sound-receiving apparatus, and the diagnosis and treatment of its diseases. No part of the book will repay careful study more than that which treats of the extremely interesting and exceedingly obscure subject of nervous deafness.

Lettsomian Lectures on the Treatment of some of the Forms of Valvular Disease of the Heart. By A. ERNEST SANSOM, M.D. London: J. & A. Churchill. 1883. Pp. 93.

IT was at the request of the Medical Society of London, before whom they were delivered, that these lectures have been published. They consist of three—one on Endocarditis, another on Mitral Regurgitation, and the third on Mitral Stenosis. The diseases of the aortic valves are not referred to, because it would have involved the consideration of the diseases and disorders of arteries, with their effects upon the aorta, and would have involved the differentiation of the centripetal or atheromatous from the centrifugal or endocarditic forms of disease engaging the aortic valves.

On the cover of the book is embossed an outline figure of the chest. If a piece of ordinary note paper be applied to this, and the point of a blacklead pencil be drawn from side to side over the

paper, a rubbing will be obtained which will serve as a "chest chart," and on which the situations of murmurs, the outlines of dulness, &c., can be indicated by coloured marks.

A Guide to the Medical Profession. By EDWIN WOOTON. Edited, and with a Preface, by LYTTLETON FORBES WINSLOW, M.B., D.C.L. London: Upcott Gill. 1883. Pp. 400.

IN these pages are clearly and distinctly laid before the rising medical generation the various means of entering the profession. The work is much more full in its details, and much wider in its scope, than any of the "Student's Numbers" of the medical journals. Not only are the nineteen licensing bodies of our own country completely described, but the universities and colleges of the Continent, of the Colonies, and of America are set forth with their respective advantages and requirements. Even homœopathy has a chapter, although of infinitesimal proportions. The chapters on the Medical Schools of the United Kingdom are very satisfactory; Irish schools are fairly and accurately detailed. This is, we believe, the first time that a compilation on such a large scale has been undertaken, and the contents have been arranged with considerable industry. It contains a great deal of information that could not easily be procured elsewhere. We hope uniformity of examination will soon help the author to simplify it still further.

SALICYLIC ACID IN ECZEMA.

LASSAR points out that salicylic acid is specially useful in eczema, and particularly when used as a two per cent. vaseline salve or vaseline zinc paste. In the common eczemas of the head in children, so numerous in dispensary practice, after two or three thorough cleansings, the daily application of the following salve nearly always suffices to obtain rapid and lasting results:—℞. Acid. salicylic., gr. 10; Tinct. benz., ♏ xx.; Vaseline, ℥j.; M. Ft. ung. On other parts, where a soft salve which easily melts as this is not suitable, where a firm dressing or a drying effect is desired, the following paste should be rubbed on:—℞. Acid. salicylic., gr. 19; Vaselini, ℥j.; Zinci oxidi; Amyli, āā ℥ss.; M. Leniter terend., fiat pasta. So long as the secretion is abundant, the dressing should be daily renewed. Sometimes, when it dries hard, it tickles the skin; it should then be rendered soft by subsequent inunction with vaseline.—*Monatshefte für praktische Dermatologie*, April; and *Ed. Med. Jour.*, Sept., 1883.

PART III.

HALF-YEARLY REPORTS.

REPORT ON PUBLIC HEALTH.[a]

By CHARLES A. CAMERON, M.D.; S.Sc.C., Camb.; M.K.Q.C.P.; F.I.C.; Chairman of Public Health Section, Academy of Medicine in Ireland; Vice-President, Society of Public Analysts of Great Britain; Hon. Member, Societies of Hygiene, Paris, Bordeaux, &c.; Member of Council and Professor of Hygiene and Chemistry, R.C.S.I.; Medical Officer of Health for Dublin, &c.

HOSPITAL CONSTRUCTION AND MANAGEMENT.

THE first portion of a splendid monograph on hospital construction and management has just been produced by Dr. Mouat and Mr. H. Saxon Snell.[b] There are no persons more competent to write a work of the kind than Messrs. Mouat and Snell. The former was for many years a Deputy Inspector-General of Military Hospitals, and the author of many valuable papers, more or less relating to the treatment of the sick in hospital; the latter is well known as one of the most scientific architects in London, and who has devoted much of his time to sanitary subjects. Dr. Mouat has written the first and third of the three sections into which the work is divided, and the second section is the product of Mr. Snell's pen and pencil. Dr. Mouat deals with the principles of hospital construction and the management of those institutions in such a manner as is most likely to conduce to the successful treatment of disease. He also shows the organisation and distribution of medical relief throughout the metropolis. A map and several excellent woodcuts illustrate these sections.

[a] The author of this Report will be glad to receive any books, pamphlets, or papers relating to hygiene, dietetics, &c. They may be forwarded through the agencies of the Journal.

[b] Hospital Construction and Management. By Frederick J. Mouat, M.D., F.R.C.S., and H. Saxon Snell, Fellow of the Institute of British Architects, &c. London: J. & A. Churchill & Co. 1883. Quarto, pp. 140.

In Mr. Snell's part of the work we have descriptions of typical hospitals of various countries, illustrated by numerous woodcuts and more than 50 lithographic plates.

The historical part of the work is interesting. We are informed that hospitals upon the present plan are not two centuries in existence. At an earlier period the hospitals were chiefly institutions of ecclesiastical fraternities, in which the care of the sick was a matter of secondary importance. Many of them were chiefly houses of entertainment for travellers. There were, however, many hospitals specially devoted to the reception of lepers, the returning Crusaders having spread leprosy largely throughout Europe in the eleventh and twelfth centuries. The oldest of the modern general hospitals in London is the Westminster, founded 1717. Guy's Hospital was established in 1723, St. George's in 1733, London in 1740, and the Middlesex in 1745.

The oldest maternity in London is the British Lying-in Hospital, established in 1749. The oldest lying-in hospital is the Rotunda, Dublin, founded in 1745. St. Thomas's and St. Bartholomew's Hospitals were originally ecclesiastical establishments, but they were secularised in the sixteenth century. The following are the dates of the foundation of some of the Irish hospitals:—Jervis-street, 1726; Steevens', 1733; Mercer's, 1734; the Meath, 1756; House of Industry, 1774; Cork, 1720; Limerick, 1759; Belfast, 1797.

Dr. Mouat states that the Arabs, as early as the eighth and ninth centuries, established hospitals devoted solely to the care of the sick. At Cordova, in Spain, the Moors had a splendid hospital, which, for a long period, was not only a refuge for the sick, but a valuable school of medicine.

Dr. Mouat recommends that general hospitals should be placed in the outskirts of towns, whilst dispensaries and other institutions for the treatment of out-patients should be situated in places most accessible to those who require to resort to them. The hospital should be surrounded by an open space, extending to a distance of at least double the height of the building. The interspaces should not be paved yards, completely invested by lofty buildings, but should consist of open cultivated gardens, accessible to the patients when convalescent, but provided with shelter, so that they might remain as much as possible out of doors. The site and aspect of the hospital should, if possible, be such as to secure the greatest amount of sunlight at all seasons. The points of geological formation, direction of drainage, and protection against winds

which blow across or from unhealthy regions require careful attention.

In reference to the subject of ventilation, Dr. Mouat protests against the practice of merely providing a certain amount of cubic space for the patients, regardless of the number of persons in a ward or the number of stories of the building, or of its situation in town or country. The amount of air which suffices for a person if he be the sole occupant of a room is inadequate if he be the sharer of an apartment with another person—that is, if a person sleeps in a room in which there are 500 cubic feet of space he will do very well; but if two persons sleep in a room in which there are 1,000 cubic feet of space they are not so well off. It would seem that whilst a man can bear with comparative immunity the exhalations from his own body, he cannot so well tolerate those from other persons. The results of the experience of hygienists and hospital physicians prove that the aggregation of persons is injurious, even if the amount of breathing space for each be very large. Dr. Mouat cites a case which shows the good effects resulting from the isolation of the sick. A large number of persons were imprisoned in a gaol in India. They were sickly half-starved men, who had been convicted for robberies of grain. The greater number were placed in well-ventilated wards, whilst 120 were confined in separate cells. The latter had each 480 cubic feet of space, but they were not well ventilated, being situated in long corridors placed at right angles to the direction of the prevailing winds. None of the prisoners confined in the cells died, whilst amongst the persons confined in the wards there was a high mortality, caused by various diseases, but chiefly by diarrhœa.

Professor Layet, of Bordeaux, has treated[a] upon what he terms "the coefficients of aeration, or the renewal of air necessary to prevent the effects of overcrowding in inhabited spaces." He contends that the quantity of air to be renewed for a person breathing in a space of 20 cubic metres differs from that necessary if the breathing space be 100 cubic metres. The proposition is self-evident. In Cameron's "Manual of Hygiene," page 114, it is stated that it is quite possible to overcrowd a building which, having the sky for its roof, affords to all within its walls "unlimited cubic space for breathing in." Professor Layet has, however, prepared elaborate Tables showing the amount of air required per man per hour when placed in defined air spaces, and also the amount of air required for

[a] Annales d'Hygiéne et de Médicine Legale. No. 25. 4me Série. Jan., 1881.

the maintenance of the combustion of candles, oil, and coal gas. As the tables are very interesting it is worth the space to reproduce them in a condensed form:—

Table of Coefficients of Aeration.

Space in Cubic Metres *	Coefficient of Aeration or quantity of air necessary per man and per hour	Coefficient of Aeration per candle, producing 15·45 litres of Carbonic Acid per hour	Coefficient of Aeration for a lamp burning 42 litres of oil per hour, and producing 55·65 litres of Carbonic Acid per hour	Coefficient for jet of gas, giving a light equal to that of preceding light, and producing 88 litres of Carbonic Acid per hour
	Metr. Cub.	Metr. Cub.	Metr. Cub.	Metr. Cub.
4	151·000	—	—	—
6	101·000	—	—	—
8	76·000	—	—	—
10	61·000	31·900	110·300	177·000
20	31·000	16·450	56·000	89·000
30	21·000	11·300	38·000	59·666
40	16·000	8·722	28·824	45·000
50	13·000	7·180	23·250	36·200
60	11·000	6·150	19·550	30·333
70	9·600	5·410	16·900	26·142
80	8·500	4·862	14·912	23·000
90	7·650	4·525	13·366	20·555
100	7·000	4·090	12·130	18·600
110	6·454	3·800	11·116	17·000
120	6·000	3·572	10·275	15·666
130	5·616	3·376	9·571	14·538
140	5·284	3·206	8·950	13·571
150	5·000	3·060	8·420	12·733
160	4·750	2·931	7·956	12·000
170	4·530	2·818	7·547	11·352
180	4·332	2·716	7·183	10·889
190	4·157	2·626	6·857	10·263
200	4·000	2·545	6·565	9·800

* A cubic metre is 35·316581 cubic feet English.

Table of Coefficients of Aeration—continued.

Space in Cubic Metres	Coefficient of Aeration or quantity of air necessary per man and per hour	Coefficient of Aeration per candle, producing 15·45 litres of Carbonic Acid per hour	Coefficient of Aeration for a lamp burning 42 litres of oil per hour, and producing 55·65 litres of Carbonic Acid per hour	Coefficient for jet of gas, giving a light equal to that of preceding light, and producing 88 litres of Carbonic Acid per hour
	Metr. Cub.	Metr. Cub.	Metr. Cub.	Metr. Cub.
210	3·852	2·482	6·300	9·381
220	3·726	2·445	6·059	9·000
240	3·500	2 285	5·663	8·346
260	3·306	2·188	5·291	7·810
280	3·142	2·103	4·983	7·325
300	3·000	2·030	4·710	6·866
340	2·764	1·915	4·272	6·158
360	2·666	1·840	4·133	5·830
400	2·500	1·772	3·782	5·400
440	2·362	1·713	3·550	5·000
480	2·254	1·659	3·350	4·715
520	2·154	1·596	3·105	4·390
550	2·071	1·562	3·025	4·200
600	2·000	1·515	2·855	3·853
700	1·857	1·440	2·590	3·516
800	1·750	1·388	2·391	3·200
900	1·666	1·343	2·256	2·955
1,000	1·600	1·309	2·113	2·760
2,000	1·300	1·154	1·556	1·880
3,000	1·200	1·103	1·371	1·587
4,000	1·150	1·062	1·278	1·440
6,000	1·100	1·051	1·185	1·293
8,000	1·074	1·038	1·139	1·220
20,000	1·030	1·015	1·055	1·088

Reading this table it will be seen that, supposing a person were breathing in an apartment containing 20 cubic metres, it would be

necessary to supply him with 31 cubic metres of air per hour; whilst if two persons were breathing in the same space, the amount of air required would be 62 cubic metres, and if a candle were burning in the same space, an additional 16½ cubic metres of air. If in a dormitory there were 10 persons provided with 2,000 cubic metres of air space, then each would breathe only 1·3 cubic metres of air per hour, or a total of 13 cubic metres for the dormitory. The combustion of gas in a room causes a great demand upon the fresh air. In small rooms a gas jet consumes a quantity of oxygen, equal to that required by from two to three men. It is odd, however, that whilst a gas jet requires, in a space of 10 cubic metres, 177 cubic metres of air per hour, and a man in the same space 61 cubic metres, a gas jet and a man in a space of 20,000 cubic metres require 1·088 and 1·03 cubic metres of air hourly, respectively.

Dr. Mouat describes a curious mode of purifying the air of rooms which is, he states, extensively practised by the Hindus in all parts of India. It consists of the spreading of a light coating of earth containing organic matters on the walls and floors. This process—termed *leoping*—was submitted to a practical test by Dr. Mouat. He selected four cells in the Calcutta Presidency Jail. Each had 480 cubic feet of air space, and was practically unventilated. Two of the cells were whitewashed, the other two were "leoped." In each cell a healthy prisoner was confined for a single night. Next morning it was found that the air in the whitewashed cells was stuffy and offensive, and redolent of an animal odour, whilst the air in the other cells was "as fresh and as pure as if no one had slept in them." In this case the organic matter must have acted beneficially by absorbing the foul gases and organic matter of the air of the cells. The experiment proves the utility of having shallow vessels containing charcoal placed in the wards of hospitals.

Dr. Mouat considers the question of porous *versus* impervious walls in hospitals, and determines in favour of the latter. There can be little doubt as to the superiority of the impervious walls. Those that are porous, no doubt, help to ventilate the wards without causing draughts; but they are liable to absorb organic matter of a dangerous kind from which miasms might subsequently be exhaled. Besides, ventilation should be provided for by other means than through solid walls.

Dr. Mouat is in favour of the "pavilion" as against the "block" system of hospital construction. He maintains that the number of

beds in a ward should never exceed 32. With respect to furniture, as little as possible should be used. Curtains, shelves, cupboards to contain medicine and dressings and all other fittings not necessary for the treatment and comfort of the patient, should be dispensed with. The use, in moderation, of flowers and pictures is allowable.

Dr. Mouat criticises at some length the construction of hospitals. He believes that few British hospitals have been constructed on sound sanitary principles, and avers that even the great hospital of St. Thomas, London, and the new Hôtel Dieu, Paris, are such that it is "impossible to refer to them otherwise than as examples to be avoided." There are, however, some hospitals recently erected which, according to the author, are free from the defects of the great majority of those buildings. He particularly refers to the Freidrichshain and St. Eloi Hospitals. The former is situated in Berlin and is a general hospital constructed on the pavilion plan. In planing its details the architects were guided by the advice of Virchow and Esmarch—perhaps the most eminent physician and the greatest practical surgeon in Germany. Turning to Mr. Snell's part of the monograph, ground-plans and elevations of this hospital are found, together with ample architectural details of the buildings and fittings. The site is a park, the ground of which is higher than the general level of the city. The sub-soil is firm clay 38 feet in depth. The space actually occupied by the hospital and its grounds is $23\frac{1}{2}$ acres, or 1,713 feet per bed.

The area covered by buildings is 123,020 superficial feet, or about $\frac{2}{17}$ths of the total area of the hospital grounds, and is at the rate of 205 superficial feet per bed. The buildings cost, exclusive of furniture, £210,863, or at a rate of £351 per bed.

The axis of the buildings runs north and south, so that the windows of the wards face the east and west. It is curious that in the great hospital at Heidelberg, erected about the same time and under high scientific advice, the windows face north and south. In each case it was concluded that the disposition of the windows secured the greatest amount of light and heat from the sun. It would appear to be a sounder principle to have the windows facing the south, because for about one-half of the year the sun's rays from east and west come for a very brief period, whilst at all seasons of the year the sun in these latitudes at least is mostly in the south. The hospital consists of about 20 detached buildings

of various kinds. There are 4 pavilions of one story for surgical cases. Each contains 1 large ward having 28 beds, and small, or separation ward for special cases, affording an average accommodation for 4 patients. Six two-story pavilions are devoted to the accommodation of medical patients. Each has 2 wards containing each 24 beds, and 4 small wards, each of which has 4 beds. Two two-story pavilions are designed for the reception of cases of infective disease. In each there are 4 wards for 8 beds, 4 for 2 beds, and 4 for 1 bed each. The remaining blocks of buildings are used for administrative purposes, as a nurse's institute, kitchen, wash-house, bath, mortuary, chapel, married officers' quarters, operating room, &c. The various blocks of buildings are not connected by a covered way, but merely by roadways 11 feet wide, and 1 foot higher than the level of the adjacent ground.

The large wards in the surgical pavilions are each 97 feet long, 29¾ feet wide, and 19½ feet average height. Each has in addition a recess at one end 18⅓ feet long, 7 feet wide, and (on the average) 14½ feet high. Total superficial floor space 3,014 feet, or about 107 feet per bed; cubic space, 58,133 feet, or 2,076 feet per bed. The effective window surface is 23½ feet per bed, and the lineal wall space 6 feet 11 inches. The window sashes are double, and when the windows are fully open, the ventilating space afforded by them is 682 square feet or 24½ feet per bed. The lower sashes open inwards; the upper are fanlights. The wards, save one pavilion, are warmed by a low pressure hot water system, which, though one-third more costly than the hot air system was found on the whole to possess much greater advantages than the latter. The temperature is maintained day and night at 66° F., but it can be increased to 73° if necessary.

Ventilation is largely effected by means of the windows, which face both east and west. Air is also introduced in the following way:—A little way from the building there are louvred shafts rising to a short distance from the ground, and from them channels run horizontally under ground and enter the basement of the pavilion. At the point where the channel terminates small ducts lead the air into the chambers containing the hot water pipes, where it becomes warmed; it then is emitted through flues into the smaller chambers of the pavilion about five feet from the floor, and into the large wards by passing through pedestals in which the hot water pipes are coiled—the warm air ascends, and gradually becomes cooler by mixing with the air of the room. Finally, the air is

extracted from the ward through gratings, situated in the outer wall, close to the floor and behind each pair of beds; the extraction is effected chiefly by means of the iron flue from the furnace in the basement passing into, and warming the air of, a brick shaft. The rarefied air ascends rapidly causing an insuction of air from the wards through the gratings in the wall.

The following conditions were imposed upon the contractors for heating and ventilating the buildings, and it seems that they have been complied with:—

"1. At all hours of day and night, and at all seasons of the year, it shall be possible to convey into the wards fresh air of appropriate temperature at the rate of from 2,265 to 2,574 cubic feet per bed per hour.

"2. It must be possible to admit fresh cold external air into the wards at pleasure without inconveniencing the patients.

"3. The admission or extraction of air must not exceed a velocity of 19 inches per second at points where the current can be felt by inmates.

"4. Gas-lights should assist the ventilation, and the products of combustion must not enter the rooms.

"5. In case it should be required, the amount of ventilation mentioned in No. 2 should be capable of being doubled.

"6. The air must not be emitted in places where it can be deleterious to the patients.

"7. Care must be taken that the air in the extraction shafts cannot be conducted from one room into another, and also that no backward current can take place. In this matter the influence of wind upon the outlet and inlet openings must have special consideration.

"8. All extraction and inlet shafts must be provided with proper registers for regulating the ventilation, or satisfactory reasons must be shown for the omission.

"9. Owing to the open position of the hospital, the air may be conducted into the building from any height, but it must not be allowed to come in contact with the earth and so make it damp.

"10. The fresh-air inlet openings are to be at such a distance from the mouths of the extraction shafts that no communication of air can take place between them that would affect the proper ventilation of the wards.

"11, 12, 13. Water-closets and all other rooms, corridors, stairs,

&c., are to be properly ventilated in accordance with the respective uses made of them, and in such manner as to avoid draughts.

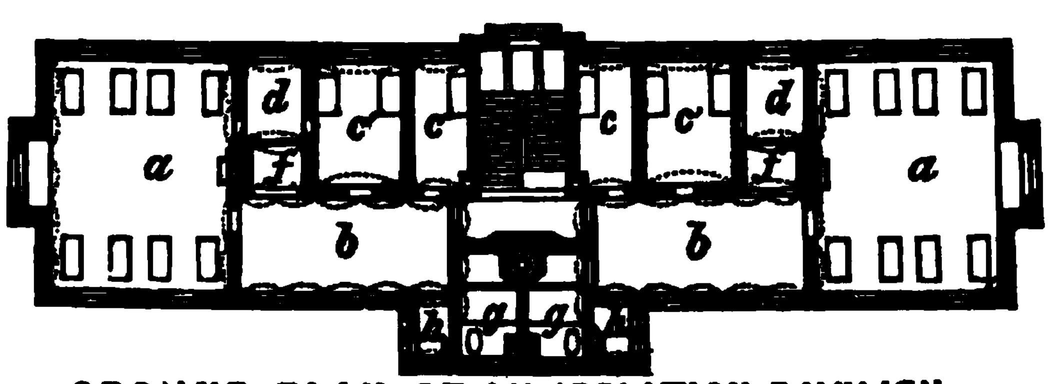
"14. Fireplaces for assisting ventilation are to be as few in number as possible.

"15. The cost of ventilation must be capable of the most exact calculation.

"16. Recording apparatus must be provided for ascertaining at all times whether the conditions laid down in clauses 1, 3 and 5 are attained."

The water-closets, urinals, and slop-sinks are contained in a building projected from the end of the large ward. The ward is not separated from the water-closets by a lobby. It is held that the extraction of air from the ward is so perfect that air is constantly being drawn out of the ward through the room containing the water-closets, and thence into the extracting shaft. The arrangement is, however, open to serious objection, for a strong wind blowing from the direction of the water-closets might force the air of the latter into the ward. The drainage of the whole establishment is carried by glazed earthenware pipes into two cast iron tanks (which are periodically supplied with carbolic acid), and thence into the "city canal."

The pavilions for medical cases are two stories high; but in other respects they resemble the surgical pavilions. The main staircase is so arranged as to be cut off from the sick wards on each side by means of a wide cross ventilated corridor. The upper wards can be reached from the outside, without any necessity to enter the ground story.



GROUND PLAN OF AN ISOLATION PAVILION.

a a. Sick wards; *b b.* Day rooms; *c c c c.* Separation wards; *d d.* Waiting rooms; *f f.* Duty rooms; *g g.* Baths and lavatories; *h h.* w.c., urinals, &c.

For the reception of infectious cases two blocks have been provided. The pavilion is two-storied, which seems to be a mistake. It contains accommodation for 44 patients; there are 2 wards of 8 beds, 2 of 2 beds, and 2 of 1 bed. The larger wards are 26 long

by 32½ feet wide; they are 14½ feet high on the ground floor, and 17 feet high on the second floor. To each bed on the ground floor there are 110 square and 1,595 cubic feet, and on the second floor 110 square and 1,855 cubic feet; the beds in the two-bed wards have each 107 superficial and 1,544 cubic feet; and the wards having only one bed, contain 151 superficial and 2,187 cubic feet of space.

The corridors from which the wards are entered are 15½ feet wide and 30 feet long: they are used as "day rooms."

Hot air and open fire places heat the buildings.

POISONOUS MEAT.

On the 23rd August, 1883, a cow, the property of Mr. Leigh, of Rosegarland, Taghmon, county of Wexford, was observed to be ill. It was believed to be affected with dry murrain. On the 24th it was slaughtered, the carcass cut up, and salted. Next day (Saturday) the greater portion of the carcass was distributed to the farm labourers and other persons. A substantial portion was cooked in a large boiler early on Saturday. On the following Monday, Tuesday, and Wednesday, this cooked beef was supplied to the farm labourers, most of it being served out in a field. Forty-nine persons partook of the beef, and of these twenty-nine became ill. The chief symptoms of their illness were diarrhœa, vomiting, and thirst. Two of the patients died. Several appear to have had a narrow escape from death. It was at once suspected that some person had maliciously introduced arsenic or other irritant poison into the meat. It was consequently resolved to have the viscera of one of the men who succumbed to the attack analysed. I was entrusted with the examination, and at the same time I received specimens of the salt which had been applied to the meat, and a portion of the beer which had been supplied, together with the beef, to the farm labourers. No poison was found in any of those articles. The stomach of the deceased was highly congested, but it was not corroded. It appeared to have been subjected to the action of an irritant, but not a corrosive, poison, such as arsenic or corrosive sublimate. The other viscera presented a normal appearance. Portions of both the raw and cooked meat were available for analysis. The latter had a very offensive odour, which was not altogether due to incipient putridity. The odour of the uncooked beef (which was in brine) was much less offensive, but still it was decidedly unpleasant. The boiled beef was permeated with bacteria and minute fungi.

The results of the analysis of all these articles having negatived the poison theory, it became evident that the putrescent properties of the meat were due to the presence of some poisonous principle developed in the meat itself. A coroner's inquest was held on the remains of one of the persons who had died after partaking of the beef, and the jury found a verdict to the effect that the deceased had died in consequence of eating diseased meat.

The disease termed in Ireland "dry murrain" is simply impaction of the third stomach. The flesh of an animal killed whilst suffering from a malady of this kind would undoubtedly be very unlikely to produce illness if used as food for man. Mr. Leigh's son, who saw the animal, stated positively at the inquest that the disease was merely dry murrain. This gentleman, though not a veterinarian, had, it appears, studied veterinary medicine at the Edinburgh Veterinary College. Mr. James M'Kenny, of Dublin, a veterinary surgeon, went to Rosegarland to inquire into the case on behalf of the *Freeman's Journal.* He inquired minutely in reference to the symptoms observed in the animal by Mr. Leigh, junior, and his herd, and from the information thus supplied to him Mr. M'Kenny came to the conclusion that the disease was really dry murrain. On the other hand, the Government sent to Rosegarland Mr. Bole, M.R.C.V.S., one of the Inspectors of the Veterinary Department of the Privy Council, and this gentleman as the result of his inquiries came to the conclusion that the cow had "splenic apoplexy," a variety of carbuncular fever, or *charbon*, as the French veterinarians term it. It is well known that the flesh of animals affected with *charbon* is highly dangerous if used as food, or even if allowed to come in contact with abraded surfaces of the body. When I was requested to examine the articles in connexion with the Rosegarland case I suspected that the cow might have been affected with "black leg" or some other form of carbuncular disease, and I wrote at once to the coroner suggesting that particular inquiry as to the nature of the cow's disease should be promptly made, and I suggested also that the Government should send a veterinary surgeon to investigate the matter. Mr. Bole states that he is quite satisfied from the account which he received of the symptoms of the disease that the cow had splenic apoplexy, and at the inquest he stated that this disease was often confounded with dry murrain. It is unfortunate that the cow was not seen by a professional veterinarian, for the malady from which it suffered must now remain a vexed question.

On inquiry I found that all the persons who sickened at Rosegarland were amongst those who had eaten the meat cooked on Saturday at Mr. Leigh's house. Portions of the uncooked meat had been taken home by several labourers and other employés of Mr. Leigh. These persons and their families partook of the meat without sustaining any injury thereby. Now, why was the poisonous effect produced by the meat confined to the portion cooked in Mr. Leigh's house? Because, I venture to reply, the cooked meat had entered into a state of incipient decomposition before it was eaten. The persons who carried their portion of the raw beef home, we may conclude, ate it immediately after it was cooked. None of the meat cooked at Mr. Leigh's house on Saturday was eaten until Monday afternoon, and the labourers continued to eat it until Wednesday. We may be sure that, as there was abundance of the meat available, it was very largely consumed by the labourers, who, too, were unaccustomed to a fresh meat diet. It may be said that beef boiled on Saturday should be fit for food on Monday; the latter day was a very warm one, and favourable to the decomposition of organic matter. It is, however, evident that the meat was in part in a state of incipient decomposition on Monday, for, on the following day, Mr. Leigh, jun., ordered some of the boiled beef to be given to pigs, as the odour was "high." It is well known that the flesh of animals that have been slaughtered whilst affected with disease decomposes more rapidly than the flesh of healthy animals. I have often seen the carcass of a cow affected with contagious pleuro-pneumonia present a very good appearance the first day, and on the following day it would acquire a very dark colour, become humid, and appear as if it had been lying for three or four days. It may be the case that even when the disease is so trivial as dry murrain, the animal's flesh is more prone to decomposition. From the facts of the Rosegarland case it is clear that if all the meat had been eaten when fresh and recently cooked no one would have suffered. It is, however, not equally clear why the flesh of a healthy cow cooked on Saturday would be poisonous on Monday. The poisonous properties of the meat at Rosegarland were perhaps partly the result of disease, partly of incipient decomposition. Probably the greatest sufferers were those who partook most freely of the meat. The case is well worth recording, as we learn from it that it is at least hazardous to eat meat which, after being subjected to cooking, has become slightly decomposed. The risk in eating such meat is increased

when the animal that furnished it had, at the time of its death, any serious disease.

Apropos of diseased meat, the question—"What influences have heredity and contagion in the production of tubercle, and what are the means available for the purpose of avoiding the noxious influence of the meat and milk of tuberculous animals?" was discussed at the late International Medical Congress at Brussels. A report was presented upon the subject, in which, in reference to the influence of heredity in the propagation of tuberculosis, it was held that—

1. Heredity has a decided influence in the propagation of tubercle.
2. The malady is transmitted by the male and also by the female parent to the offspring.
3. The transmission of the morbific principle to the ovum or to fœtus in the course of development is followed by sterility, and frequently leads to abortion and premature births.
4. The fœtus affected with tuberculosis rarely comes into the world in a state of normal vitality, and in any case does not often attain maturity.
5. Notwithstanding the above facts it cannot be denied that many descendants of tuberculous parents live and breed as do exactly the progeny of perfectly healthy animals.

In reference to the influence of contagion in the propagation of tubercle, the reporters conclude that tubercle is capable of being transmitted from one animal to another by cohabitation, by inoculation, and by ingestion of morbid products. Tubercle may be conveyed from animals to man by the consumption by the latter of the flesh or milk of tuberculous animals. Lastly, it is asserted that the lower animals may become affected with tubercle in consequence of consuming food contaminated with the egesta of phthisical human beings. It is to be feared that tubercle is by no means rare in cattle, especially in dairy cows, which are so often kept under insanitary conditions. I frequently meet with tuberculous cows in the slaughter-houses of Dublin, and always condemn those carcasses as being unfit food for man. Statistics as to the percentages of animals affected with this disease are not to any important extent available. In the Grand Duchy of Baden it was ascertained that in every 1,000 head of cattle slaughtered there were 8 affected with tubercle; 43 per cent. of the animals condemned as unfit for human food were affected with tubercle. From 1874 to 1882, out of 78,000 swine slaughtered, 22 only had

tubercle. It is, however, probable that pigs in an advanced stage of tuberculosis would not be sent to the public abattoirs, but would, as a rule, be slaughtered privately and their flesh manufactured into sausages!

Tubercle appears to be rarely met with in sheep. I have never observed tubercles in either sheep or pigs slaughtered in Dublin. Goats appear to be slightly susceptible to the disease. It is not uncommon in rabbits.

M. Barrier, Inspector-General of Animal Food in Paris, gives the following as characteristics of meat under various conditions: –

In the case of attenuated or wasted oxen the muscular tissue is very red, the fat of the spinous interstices of the vertebræ, of the cavities of the body, and of the surface of the shoulders, is very soft and damp. The marrow, instead of being white and of moderate firmness, is semi-gelatinous. In cases of carbuncular fever (charbon, blackleg, &c.) the aponeuroses are dotted with ecchymosed spots; the muscular tissue has a yellowish or pale-red hue, and when the flesh is cut into the fresh surface exposed to the air, passes from a yellowish to a brick-red colour. The blood diffused throughout the tissue is purple. Examined microscopically the bacillus of anthrax is easily detected.

Discoloration or marked injection of the serous membranes, a pale yellow colour of the fat, and the occurrence of black clots in the vascular divisions, and a preternatural red colour of the muscles, indicate that the animal had suffered from a febrile disease.

The flesh of animals affected with septicæmia is of a very dark colour, with yellowish patches here and there.

In typhoid affections the characteristic appearances are chiefly to be found in the digestive tract; its colour is brick red, which varies in intensity according to the force of the disease.

Healthy mutton has a lively red colour in its lean, and "immaculate whiteness" in its fatty parts. The flesh of cachectic animals is pale, and the fat is yellow.

The flesh of healthy pigs is pearly pink, and the fat is white. Good bacon should present the same appearance. The author might have informed us that in "hog cholera" the fat is pink.

In certain diseases—such as, for example, hepatitis and cirrhosis—a yellow hue pervades the mucous membranes, the white tissues, and even the bones. The muscles acquire a dusky-red hue, and the blood becomes yellowish brown owing to the presence of elements of the bile.

In the Eleventh Annual Report (for 1881–82) of the Local Government Board, England, the Supplemental Report of the Medical Officer describes a case of poisoning by the use of sausages. Dr. Ballard, who reports the case, states that a gardener, residing near Chester, purchased half a pound of sausages in that town. Shortly after eleven o'clock a.m. he ate the sausages. He soon became very ill, and suffered from vomiting and diarrhœa. He remained very ill for eight days and then died. It was ascertained that the sausages had been taken from a consignment of those articles recently imported from America. When it was known that they caused illness, the unsold portion was put aside. Dr. Klein was furnished with portions of the sausages, including the remains of the one from which a portion had been sold to the deceased. The sausages were given to rabbits and mice. Several of the animals became ill soon after eating the food, and some of them died. The food appeared to produce no ill effects upon others of the animals experimented upon. Hence it was concluded that the morbific principle in the sausages was not equably diffused throughout them. The *post mortem* examination of the mice and rabbits showed that their lungs were congested, and their kidneys enlarged; their stomachs contained blood. A microscopic examination of the kidneys revealed a remarkable state of things—most of the urinary tubules contained casts, and many of the Malpighian corpuscles and the inverting tissue were in a state of disintegration, although no pus corpuscles were present. The disintegration was therefore evidently the result of some destructive agency circulating in the vessels of the glomeruli of the Malpighian corpuscles.

As the sausages appeared to owe their virulent properties to the presence of a chemical poison, an attempt to isolate the poison was made by Dr. Dupré, F.R.S. That skilful chemist succeeded in extracting an alkaloid from the sausages; but the alkaloid when administered to a dog, two mice, and two rabbits, did not affect the animals.

ON THE RELATION OF PATHOGENIC TO SEPTIC BACTERIA, AS ILLUSTRATED BY ANTHRAX CULTIVATION.

Dr. Klein, of the Brown Institution, London, publishes in the Report of the Medical Officer of the Local Government Board for 1881–82 the first part of an elaborate memoir on the relation of pathogenic to septic bacteria. The author has been conducting experiments, the chief objects of which were:—

1. To determine whether or not the artificial cultivation of bacillus anthracis causes it to undergo any morphological or physiological change, and if so to what extent.

2. Whether or not ordinary bacteria of putrefaction and septic fermentation can be so modified by artificial cultivation as to be productive of disease when introduced into the body of an animal—in other words, is it possible to convert an innocuous saprophyte into a noxious pathogenic organism?

It is admitted that the ordinary bacteria which are found in decomposing organic matter may be introduced into the animal economy by the mouth or by inoculation, without any injury resulting therefrom. In certain cases where very large numbers of bacteria are taken into the system, "putrid intoxication" is sometimes induced, probably not owing to the presence of the bacteria, but to that of the chemical poisons of putrid matter described by Bergmann, Panum, Selmi and others. On the other hand, it is held that only very small numbers of the pathogenic bacteria are required to induce disease in animals.

Dr. Klein gives an interesting *résumé* of the views of eminent microscopists and pathologists in reference to the relation between bacteria and specific diseases. It is held that the introduction of virulent bacteria into the system may induce not only general but local disease. Anthrax, *febris recurrens*, and the pneumo-enteritis of the pig, are general disorders resulting from infection by bacteria of a specific character. On the other hand, local disease of the lungs is caused by an invasion of actinomyces; whilst, as shown by Cohnheim and Salomonsen, the introduction of tubercular virus into the anterior chamber of the eye is followed by an eruption of tubercles in the iris.

Professor von Nägeli, in his work "Die niederen Pilze," &c. (Munich, 1877), asserts that harmless saprophytes may become converted into pathogenic organisms, and *vice versa*. He even goes so far as to believe that an innocuous organism may, under certain conditions, become a virulent one capable of causing an infectious disease, and that whilst generations of its descendants may retain their infective power, its race may ultimately, under altered circumstances, revert to its original harmless nature.

Dr. Hans Buchner claims to have verified von Nägeli's theory by the results of experiments. He states that he had succeeded in converting the deadly bacillus anthracis into a harmless bacillus, and the innocuous *bacillus subtilis* (Cohn's) of hay infusion into the

bacillus anthracis. Buchner considers that, morphologically, all these kinds of bacilli are identical.

M. Pasteur cultivates the anthrax bacilli in chicken broth at a temperature of 42° C. and 43° C. In a month or six weeks the cultivation comes to a close as the organisms perish. At first the bacilli are virulent, but gradually they become less so, and finally (though still growing) they cease to be virulent. It is remarkable that during the cultivation of the bacilli, though they develop their characteristic convolution of threads, they never produce spores. It appears to be admitted that the anthrax bacillus, when "attenuated" by Pasteur's process, induces by inoculation a mild disease in sheep, which is a "vaccine" or protection against splenic fever.

According to Pasteur, when an animal dies from splenic fever and is buried, the spores of the bacilli are taken up by earth worms, carried to the surface of the ground, and deposited there with the castings of the worms. From the surface of the soil they gain access to the mouths or nostrils of animals grazing on the soil.

Koch, in criticising Pasteur's statements, shows that the bacillus of anthrax cannot develop spores at a temperature below 15° C. (59° F.), and, therefore, that at a depth of a metre below the soil (in central Europe at least) the temperature is too low to admit of the development of anthrax bacillus spores in the unopened body of an animal. The want of oxygen also prevents the development of the spores. Koch has also made experiments with earth-worms and spores of bacillus anthracis, which he asserts negative Pasteur's earth-worm theory.

According to Koch the bacillus is naturally an inhabitant of the soil, and it is only as an accident that it becomes a parasite of, and induces disease in, animals. Finally Koch failed to produce any mitigation of the virulence of the bacillus by cultivating it artificially through 50 generations. On this point he is directly at issue with Pasteur and Buchner.

Dr. Klein's contribution to the literature of bacillus anthracis records experiments, the results of which harmonise in most respects with Koch's results, and are, in important particulars, apparently at variance with those of Pasteur. Klein cultivates the bacilli during several weeks and develops 30 generations of them. After a time they undergo changes which are apparent to the naked eye. The bacilli degenerate apparently from

exhaustion of the pabulum suitable to them. In their degenerate condition they do not, as a rule, produce disease in animals. In some cases, however, the attenuated bacilli cause by inoculation disease in at least rodent animals. In short, Klein found that the cultivated bacilli either acted as virulently as the uncultivated microbes, or did not act at all. It will thus be seen that the experiments at the Brown Institution failed to produce a modified anthrax microbe which would confer upon animals the same kind of immunity against charbon which vaccine is supposed to confer upon man against the attacks of smallpox. Klein found that when the bacilli ceased to be fatal to mice, they acted poisonously on other animals.

It is to be noted that Klein operated upon mice and other rodents, whilst Pasteur experimented with sheep. He has not published the full details of the process which he has adopted in producing his anthrax "vaccin." He has stated that it is protective in the case of animals generally, but so far as the mice, rabbits, and guinea-pigs, experimented upon by Klein, are concerned, the attenuated bacillus virus did not act as a prophylactic upon those animals. It is to be hoped that Pasteur will soon reply to Klein's criticism. It is to be regretted that the resources of the Brown Institution did not, presumably, allow of the employment of sheep instead of small rodents. It may, with some show of reason, be said that Klein's results are merely negative, whilst Pasteur's are positive. The success of Pasteur is demonstrated by the extraordinary demand for his anthrax vaccine by the owners of sheep. The demand is fifty times greater than the supply.

It now seems to be clearly established that the cause of the woolsorters' disease is the bacillus anthracis. Mr. Spear's Report (First Supplement to the Tenth Annual Report of the Local Government Board), and Dr. Greenfield's paper (in the Supplement to the Eleventh Annual Report of the same Board), describe several cases of wool-sorters' disease which were undoubtedly due to infection by bacillus anthracis.

THE CHOLERA MICROBE.

The Governments of France and Germany have sent scientific commissions to Egypt to investigate the cholera epidemic in that country. We have as yet no report from the French commission; but Dr. Koch, on the part of the Germans, announces that he had discovered a microbe peculiar to the disease. This microbe was

found in "colonies" in the intestinal tract of persons affected with cholera, but the bacterium was not detected in the blood, liver, lungs, kidneys, or other organs usually the seat of internal parasites. Koch believes that the severity of the attack of cholera is proportional to the numbers of bacteria present in the intestines.

The bacteria most nearly resemble the threadlike bacillus associated with glanders in the horse. Monkeys, rabbits, guinea-pigs, dogs, cats, pigs, and rats were inoculated with the bacteria, but the disease was not thereby propagated to the animals. All previous attempts to convey cholera from man to the lower animals proved failures.

Koch does not assert positively that the bacteria which he found in the intestines of cholera patients are the cause of the disease; it is possible that they may only be the result of it. Böhn, Hallier, Thorné, and Klob, have long since asserted that cholera is caused by the presence of micro-fungi in the intestines; and Bryden—an eminent Indian medical authority—advocates the germ theory of cholera. On the other hand, C. Macnamara, J. R. Lewis, and D. D. Cunningham, assert that they have in vain sought for these alleged cholera fungi or bacteria. It must, however, be borne in mind that the methods of detecting bacteria, &c., in the tissues of animals have been greatly improved within the last two or three years. It must be admitted too, that no one is more capable of discovering the microcosms of disease than Koch, the discoverer of the tubercle bacillus.

FAILURE OF CHEMICAL ANALYSIS OF WATER TO DISCOVER SERIOUS POLLUTION THEREIN.

In the Supplement to the Eleventh Annual Report of the English Local Government Board an elaborate paper by Dr. Cory is published, in which it is shown that the intentional addition of typhoid stools to water was not detected by chemical tests. One gram of a consistent typhoid stool was mixed with 100 cubic centimetres of pipe-water. Of this mixture 10 cubic centimetres were added to 2 litres of the pipe-water contained in a vessel (*c*), and 5 cubic centimetres to 2 litres of the water in a vessel (*b*), whilst an equal quantity of the unpolluted water was placed in a vessel labelled "*a*." The specimens were submitted to Dr. Dupré, F.R.S., for chemical analysis. A duplicate of "*c*" was sent to Mr. Stewart for microscopical examination. Both gentlemen were aware of the

nature of the articles submitted to them. The following are the results of Dr. Dupré's analysis:—

The stool used was that of Wm Bennett, obtained on the morning of the 3rd of Feb.	A. Unpolluted water drawn on the 3rd of Feb.	B. 2,005 c.c. of water polluted with ·05 grm. of typhoid stool. Water drawn on 3rd of Feb. Pollution=1·75 grains of stool per gallon.	C. 2,010 c.c. of water polluted with ·1 grm. of typhoid stool. Water drawn on 3rd of Feb. Pollution=3·5 grains of stool per gallon.
Appearance . .	Clear . . .	Very slightly turbid .	Slightly turbid
Colour . . .	Pale greenish . .	Pale greenish brown .	Pale brown
Deposit . .	None . . .	Minute trace . .	Trace
Nitrous acid .	None . . .	None . . .	None
Phosphoric acid .	Very minute trace .	Strong trace . .	Much
Colour of residue .	Very pale yellowish brown.	Very pale yellow brown.	Pale yellow brown
Behaviour of residue on ignition .	Blackens very slightly	Blackens very slightly	Blackens markedly
	Grains per gallon	Grains per gallon	Grains per gallon
Oxygen absorbed from permanganate (cold).	0·0455	0·0490	0·0525
Total dry residue .	24·08	24·08	24·36
{ Volatile matters	0·84	1·96	1·96
{ Fixed salts .	23·24	22·12	22·40
Chlorine . .	1·05	1·05	1·05
Nitric acid . .	0·77	0·77	0·77
Free ammonia .	0·0021	0·0025	0·0027
Alb. ammonia .	0·0075	0·0095	0·0123

"The waters were allowed to stand at rest for 24 hours, and only the clear water (without the deposit) was taken for analysis."

Mr. Stewart reported as follows:—

"Deposit fairly abundant.

"It consisted chiefly of crowds of flagellate infusoria, some with collars, a few ciliate infusoria. Bacterium termo and lineola both active and resting in considerable quantity; motionless, many-jointed curved filaments of schizomycetous fungus, and living mycelium; a few dead diatoms, synedra; fibres of textile fabrics—*e.g.*, stained wool and flax; amorphous organic matter."

It will be seen that the addition of 0·05 grain of typhoid stool to a litre (1,000 grains) of water, or 1·75 grains per gallon, only increased the amount of solid matter in "*c*" to the extent of 0·28 grain; whilst it appears that the addition of 0·87 grain of the typhoid stool to "*b*" made no addition to the weight of the solid residue obtained by evaporating the latter. Under those circum-

stances it was considered desirable to determine the amount of soluble matter in typhoid dejection, deprived of its aqueous constituent. An ordinary typhoid stool was examined and found to contain 8·3 per cent. of solid matters, of which 6·1 per cent. consisted of soluble matters. If, therefore, 1 grain of typhoid stool got into a gallon of water, only $\frac{6}{100}$ of a grain of the stool would dissolve in the water.

A large number of other specimens of water intentionally polluted were analysed, and the results did not present any very striking differences as against the results of the analysis of the same waters unpolluted. There were differences, no doubt, but the analysis of some of the waters polluted with typhoid stools did not detect the presence of larger amounts of impurities than are usually allowed to be present in fairly good waters.

A water containing 0·0025 grain of saline ammonia and 0·0095 grain of albuminoid ammonia per gallon, would be usually considered by the analyst as a fairly good, though not a very good one; yet we find that these proportions actually existed in a water to a gallon of which 1·75 grain of typhoid stool had been added.

At the present time there is no accurate chemical method for determining the precise nature of the organic matter contained in water. As a rule the larger the proportion of nitrogen in the organic matter the more likely is it to have been derived from an animal source. The process of Frankland aims at ascertaining the probable nature of the organic matter by determining the relation between the amounts of carbon and nitrogen. In albumin the ratio of carbon to nitrogen is as 24 to 7, whilst in urea the ratio is as 3 is to 7. Albuminoid bodies and urea constitute the great bulk of the animal matter present in potable water. The organic matter of vegetable origin consists in general of peaty substances very poor in nitrogen but rich in carbon. When the proportion of nitrogen to carbon is as 1 to 3, the organic matter is undoubtedly animal.

The amounts of typhoid matter added to some of the specimens of the water was very large. For example, 14 grains were put into a gallon of water, the latter, when analysed, was found to contain 0·0075 of albuminoid ammonia per gallon. This is a smaller proportion of albuminoid ammonia than is constantly present in the Vartry pipe-water which supplies Dublin, and the purity of which is unquestionable.

It must be admitted that a considerable quantity of animal

excrement may be added to a pure water, without placing the latter in the category of bad waters, as defined by the leading water analysts.

In the 5th edition of Mr. Wanklyn's well-known book on "Water Analysis," drinking waters are arranged into three classes according to the amounts of albuminoid ammonia which they yield on distillation with potash and permanganate of potassium. The waters of the first or best class are those in which the albuminoid ammonia does not exceed 0·05 parts of albuminoid ammonia per million parts of water. Mr. Wanklyn, however, who analysed a specimen of water to 1 gallon of which the soluble portion of 3½ grains of typhoid stool had been purposely added, found that the excreta added only 0·002 part of albuminoid ammonia to a million parts of the water.

Before Dr. Cory commenced these interesting experiments, there were many chemists who did not believe that because a water contained 2 or 3 grains of organic matter or even a greater proportion, that it was necessarily an unwholesome water. It has generally been held that it was not so much the quantity as the nature of the organic matter in water which rendered the latter dangerous to health. When Frankland devised his process of water analysis it was with the design to ascertain as far as possible the nature of the organic constituents of water as well as the quantity. To a certain extent his process is a failure, nor is there any analytical method known which throws much light on the origin of the dissolved organic matter found in water. It may be said then of what utility is water analysis if it passes as good a water largely impregnated with typhoid excreta? It is true that some of Dr. Cory's polluted specimens gave favourable analytical results; still in many of the specimens the reactions were unfavourable. They were turbid, and phosphoric acid was present either as "strong trace" or "much." The phosphoric acid indication of sewage impurity is an excellent one. The value of water analysis is best shown where it demonstrates the presence of a large amount of organic matter, and although such matter is often comparatively harmless, still it is frequently the reverse. The greater the amount of organic matter the greater the probability that it may include the infective principles of some such disease as typhoid fever or dysentery. When we have a water with a very small quantity of albuminoid material in it, there is no great likelihood that the dejections of typhoid fever patients will be present in it. Under the ordinary conditions affecting our water supplies, it is improbable that typhoid excreta

would be mixed with water in the same way that Dr. Cory mixed it. Typhoid stools are thrown into water-closets or privies, ash-pits, manure heaps, the soil, or into ditches, rivers, or other water-courses. From all these media, they may find their way into wells, or lakes or rivers furnishing potable water; but, with rare exceptions, there must under such circumstances be a large quantity of other kinds of organic matter associated with the typhoid excreta, and carried together with the latter into the water. In other words, the passage of unmixed typhoid excreta into potable water must be a circumstance of very rare occurrence.

DETERMINATION OF SALICYLIC ACID IN MILK.

The use of salicylic acid as a preservative of milk, cream, butter, and other articles of food, has now become somewhat general. This compound may or may not be an improper preservative. One would, on general principles, prefer to partake of an article preserved by means of salt, or sugar, than by salicylic acid, or boric acid, and similar drugs. It is sometimes desirable to ascertain the presence of salicylic acid in food, and for this purpose, the process recently suggested by A. Remont[a] appears to be a good one. 20 cubic centimetres of—say, milk, are shaken up with 2 or 3 drops of sulphuric acid, when the clot which at first forms is broken up, 20 c. c. of sulphuric ether are gradually added, and the mixture agitated until the ether is partially emulsified. On standing for some time, 10 c. c. of the etherial solution are poured off into a test tube, having a mark on it to measure that quantity. The ether evaporates, and a fatty residue is obtained which is boiled in spirit containing 40 per cent. of alcohol, and allowed to cool. The 10 c. c. solution now contains all the salicylic acid present in the same quantity of the milk. 5 c. c. are filtered into a burette, 0·015 metre in diameter, 2 or 3 drops of a 1 per cent. solution of ferric chloride are added. A rich violet colour is produced, and is compared with the colour produced in a liquid obtained by similar treatment from milk containing a known quantity of salicylic acid.

SULPHUR DIOXIDE AS A DISINFECTANT.

The *Annales d'Hygiène Publique et de Medecine Legale*, for Feb., 1883, contains a paper on the action of sulphur dioxide as a disinfectant, by A. Lailler. A paper which appeared in the *Annales* for November, 1881, had referred to the use of this gas as a sanitary

[a] Bulletin de la Société Chemique de Paris. No. 11. Dec. 5, 1882.

agent in Avignon. The process consisted in burning 35 grams of sulphur per cubic metre of air in rooms infested with vermin. After the expiration of 24 hours bugs, rats, and other vermin were found dead scattered about the floor. The odour of the sulphur dioxide remained in the rooms for three or four days, and their occupants suffered from gastric irritation, though they had not re-occupied the rooms until 48 hours had elapsed after the fumigation. After this experience it was suggested that the rooms should be more thoroughly ventilated before being re-occupied.

According to Hirt an atmosphere containing from 1 to 4 per cent. of sulphurous acid gas cannot produce any serious effect upon ordinary persons, though it may produce in persons having idiosyncracies, a cough, fits of sneezing, and even salivation. Air containing from 5 to 7 per cent. of the gas seems to attack in particular the digestive organs, and when the proportion reaches 15 per cent., chronic catarrh, pneumonia, and conjunctivitis are liable to be caused under these circumstances. What are the proper quantities of the gas to use? The military sanitary authorities recommend for the fumigation of barracks 300 grams of sulphur per cubic metre—an excessive quantity, as a metre of air cannot maintain the combustion of more than 68 grams of sulphur, producing 47 litres of sulphurous acid. On the other hand, Dr. Aubert calls attention to the statement of Dr. Hemberg, United States Army, that perfect disinfection may be obtained by burning 16 grams of sulphur per cubic metre of air.[a]

The Germans have made numerous researches in order to determine the exact proportion of sulphurous acid required to destroy the activity of disease germs, but they have not as yet solved the question. M. A. Lailler asserts that sulphurous acid is the most efficacious of disinfectants, and to be preferred to all others, when the room to be disinfected can be detenanted. In cases where combustion of sulphur is inadmissible the syphons of the "Raoul Pictet Company" are recommended to be used. The syphons contain a solution of sulphurous acid gas in water and under high pressure. A strong solution of the gas may be directed from the syphon upon the walls of the apartment.

[a] Hemberg states that he found the efficacy of vaccine lymph to be destroyed by much smaller proportion of sulphurous acid in air than I employed for that purpose. He appears, however, to have operated upon grains weight of sulphur whilst I employed ounces, and the conditions of my experiments were more like those in the actual practice of disinfection. His sulphurous acid was probably hot when it came in contact with the lymph.—C. A. C.

WATER IN CONNEXION WITH THE ÆTIOLGY OF TYPHOID FEVER.

M. H. Gueneau de Mussy, in the *Bulletin of the Belgian Academy of Medicine* for March, 1883, states that water can hardly play only a secondary part in the propagation of typhoid fever. On the contrary, he considers that it is generally the chief vehicle and often the only agent in the propagation of the disease. The disuse of water infected by typhoid germs arrests the progress of an epidemic. The primary cause of the disease is the ingestion of water contaminated by recent dejections containing the specific virus of typhoid fever. He considers that a commission should be appointed to investigate the ætiology of typhoid fever.

M. Rochard agrees with M. Mussy that water is a vehicle of typhoid fever, but he believes that the overcrowding of people is a factor in the development of typhoid germs. He thinks that the possibility of the poison of the disease being introduced into the system through the medium of the respiratory organs has not received sufficient attention. In places in which the utmost degree of cleanliness is observed, as, for example, on board of men-of-war, typhoid fever appears whenever the hatches have to be kept closed for any length of time. In English ships, which, in proportion to their size, have fewer hands on board, typhoid fever is very rare.

Dr. Rochard comments on the bad quality of the water supplied to Paris. He states that several severe epidemics of typhoid fever have been traced to the use of the water of the Seine.

M. V. du Claux, in reference to a recent inundation of water into the lowest story of a number of houses in Paris, suggests that under such circumstances protection against foul emanations from the water may be obtained by pouring on it a few gallons of heavy coal oil—a very cheap article.

LABOURERS' DWELLINGS.

A recent Act of Parliament enables the boards of guardians and other local authorities to provide proper dwellings for the labouring classes. The corporations of boroughs and other municipal authorities have had the power for many years past to build dwellings for artisans and labourers, and even to provide nightly lodging-houses for single persons of both sexes. These powers have been scantily exercised up to the present. It seems probable that the Corporation of Dublin will shortly erect dwellings for the labouring classes upon a property which has recently fallen

into their possession by the lapse of a long lease. A plan to spend £25,000 for this purpose has been agreed upon by the Public Health Committee, but it has still to be approved of by the Corporation at large. It is to be hoped that their consent will not be withheld, for no more efficacious means for improving the sanitary state of a town could be devised than the providing of the poorest and most dependent classes with healthful dwellings. The following statement shows the bad lodging accommodation afforded to the lower classes of Dublin:—One hundred married labourers in the service of the Corporation are divided into three classes according to the amount of their wages. Seventy-four of these labourers and their families occupy each a single room. The following table shows the rent paid by these labourers and the accommodation which they receive for it:—

Number of Families	Weekly Wages of Head of Family	Average Number of Persons per Family	Average Number Apartments Occupied	Average Weekly Rent in Pence
	£ s. d.			
40	0 15 0	4·22	1·25	24·25
40	0 17 6	4·36	1·3	26·45
20	1 0 0	4·25	1·3	26·15
100	0 17 0	4·27	1·28	25·61

It will be seen that the labourers receiving 20s. weekly pay less rent than those having only 17s. 6d. weekly; perhaps the former spend more in drink, for I have often noticed that the homes of many well-paid artisans are more wretched than those of labourers, owing to the drinking habits of the artisans.

TEST FOR GRAPE SUGAR.

Dr. L. S. Oppenheimer (*Western Med. Reporter*, Aug., 1883) commends the following test for use in college laboratories and to the busy practitioner:—Take sulphate of copper, 55½ grains; glycerin, 1 ounce. Triturate the copper carefully and thoroughly before adding the glycerin. Pour a couple of drops into a small test tube; add a little common liquor potassæ and boil. Now drop the suspected urine, one drop at a time, into the hot liquid. If there is the minutest particle of sugar present a bright opaque orange or yellow will suddenly appear. One drachm of the above solution will, according to Dr. Oppenheimer, be decolorised by exactly one grain of grape sugar in the presence of a caustic alkali.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

CLINICAL RECORDS.

Sir Patrick Dun's Hospital. *Clinical Notes.* By Walter G. Smith, M.D., Dublin; F.K.Q.C.P.I.; King's Professor of Materia Medica; Physician to Sir P. Dun's Hospital.

I. SUDDEN EXTENSIVE HÆMORRHAGE INTO THE SKIN.
II. ACUTE LEAD-POISONING.

Case I.—*Sudden Extensive Hæmorrhage into the Skin.*[a]

James D., aged forty years, labourer, admitted 23rd May, 1883. He had not been in good health for the past six months, complaining of sick stomach and lightness in the head; and had been drinking whisky freely before his present illness came on. On Thursday night, *i.e.*, four days prior to admission, after he had retired to bed, he suddenly felt down the back of the right thigh a sharp pain, which he described as like rheumatism. This pain was not continuous, but came and went at intervals of a few minutes. Next morning it was found that the back of the thigh was discoloured, nearly black.

State on Admission.—From the fold of the nates to the lower part of the popliteal space there was an extensive dusky-red ecchymosis. The hæmorrhage was distributed in closely adjacent patches, arranged as vertical and transverse stripes (vibices), chiefly the latter, and closely following the crest of the ilium there was another broad streak of hæmorrhage. No trace of hæmorrhage existed elsewhere on the body.

No alteration in size could be made out in either liver or spleen. Lungs healthy; pulse fairly strong, 44. Copious deposit of mucus in the urine, which was free from albumen, sugar, or bile. The patient was ordered a mixture of ergot and iron, and under the influence of rest in bed the hæmorrhage rapidly faded, and six days after admission had almost entirely disappeared.

[a] From notes taken by Mr. M'Adam.

Points of interest.—1. Suddenness of the hæmorrhage. 2. Its peculiar arrangement in stripes. 3. Limited to one limb. 4. Hæmorrhage not clearly associated with any definite cause or concomitant condition.

Case II.—*Acute Lead-poisoning.*[a]

W. V., a sailor, aged thirty-five, came to the dispensary of Sir P. Dun's Hospital on Thursday, May 3rd, 1883, suffering from great abdominal pain, and a feeling of weakness and prostration. The pain was increased when he stood up or walked, and was relieved when he lay down. For some days his appetite had failed—he had been vomiting considerably—his bowels had not acted, and he had felt so unwell that he was forced to give up his work. His face had a peculiar sallow colour, which at first suggested the idea of malignant disease. His tongue was dirty—his pulse rather weak. On examining his abdomen, which presented no abnormal appearance, no evidence of a tumour could be detected, and pressure applied to the spot where the pain was most severe seemed to relieve rather than increase it. On inquiring more closely into his history it appeared that on the 27th ult. he began painting the ship to which he belongs with red lead "between decks," and used for mixing the paint a considerable quantity of turpentine. He continued at this work for three days, towards the close of which he became affected as described above, together with several of his fellow-workmen upon the same task. The mention of lead caused a reference to be made to his gums, and the characteristic "blue line" was there found plainly existing, leading, with the other symptoms, to the conclusion that the patient was suffering from lead-poisoning. There was no appearance of lead palsy.

On the following day—the pain still continuing—he was taken into hospital and at once put to bed. He was then given a purgative enema, had a hypodermic injection of morphia, and was put upon a mixture of iodide of potassium and sulphate of magnesium. The good results of this treatment were seen next day, for the pain had left him, his bowels had been loosened, his face had nearly lost its sallow colour, and he felt himself better in every way. The urine he had passed was scanty, high coloured, and contained a very large quantity of lithates, but no trace of lead could be detected in it.

The improvement in the patient's condition has since continued, and he is now, May 8, almost completely recovered.

Remarks.—Iodide of potassium and sulphate of magnesium have each been strongly advocated on chemical grounds in the treatment of lead-poisoning. But the administration of the two drugs in combination or successively I believe to be a better and more rapid method of treatment, and its practical efficacy is intelligible by these considerations.

[a] From notes taken by Mr. M'Adam.

Lead is excreted chiefly in the bile. Now we know that the liver not only forms new bile, but again secretes old bile which has been absorbed from the intestine; or, in other words, there is a subsidiary entero-hepatic circulation (Lussana, Schiff) going on in the body whereby a comparatively small quantity of poison circulating in the bile may be retained within the system for an indefinitely long time. If now a purgative be given, which hurries out the contents of the small intestine, *e.g.*, castor oil, salines, &c., so as to interfere with the re-absorption of the bile, it follows that the elimination of any substance contained in the bile will be favoured. Putting aside symptomatic indications, the rational objects in the treatment of lead-poisoning then are these:—

1. To bring into a state of solution the lead out of whatever combination it may have formed with the tissues (alkaline iodides).

2. To prevent re-absorption of the lead through the vicious circle of the entero-hepatic circulation (purgatives).

THE USE OF VASELINE TO PREVENT LOSS OF ALCOHOL FROM SPECIMEN JARS.

In a paper with this title, by Professor Burt G. Wilder and Dr. Simon H. Gage, of Ithaca, N. Y., attention was called to the fact that the petroleum preparation termed vaseline was known to be practically unaffected by ordinary temperatures and by most substances. In the *Journal of the Chemical Society* for July, 1882, p. 785, it was said to be sparingly soluble in cold, strong alcohol, and completely in hot, but to separate out on cooling. After trying various subtances—wax, paraffin oil, and glycerin—with but partial success, the use of vaseline was suggested by the two authors independently and nearly at the same time. The experiments tried last spring indicated that during three months, at ordinary spring and summer temperatures, there was no appreciable loss of 95 per cent. alcohol from glass phials or jars, whether upright or inverted or on the side, provided the corks were smeared on the bottom as well as on the side. Ground-glass stoppers were anointed and firmly inserted, and the rubber rings of fruit jars and the specimen jars made by Whitall, Tatum & Co., were coated on both sides and the covers well screwed down. The authors had also used the vaseline for preventing the loss of other liquids, including chloroform and oil of turpentine; as a lubricator of drawers, and to prevent the sticking of the covers or stoppers of cement phials; and for the prevention of rust upon steel instruments.—*N. Y. Med. Jour.*, Sept. 1.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P., F. R. Met. Soc.

Vital Statistics

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, October 6, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered			Deaths from Seven Zymotic Diseases							Deaths from Phthisis	Death-rate per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa		From all causes	From seven Zymotics
Dublin, -	349,685	720	664	163	139	–	2	29	1	15	13	52	71	24·7	4·2
Belfast, -	214,022	483	343	109	43	–	-	28	–	8	7	22	47	20·8	3·9
Cork, -	80,124	155	128	22	26	–	–	1	2	–	1	6	28	20·8	1·6
Limerick, -	38,562	62	91	15	26	–	2	1	5	5	1	4	8	30·7	6·1
Derry, -	29,162	82	56	3	11	–	–	25	–	–	1	–	5	25·0	11·6
Waterford,	22,457	47	42	5	8	–	–	–	–	–	2	2	3	24·3	2·3
Galway, -	15,471	18	33	4	10	–	–	–	–	–	4	1	6	27·8	4·2
Newry, -	14,808	30	20	5	6	–	-	–	-	–	1	3	2	17·6	3·5

Remarks.

Except in Waterford, a slight rise in the death-rate was generally observed. In the eight selected towns it ranged from 30·7 per 1,000 of the population annually in Limerick to 17·6 in Newry. The rate of mortality from seven zymotics was as high as 11·6 per 1,000 per annum in Londonderry and only 1·6 in Cork. The death-rate was 19·1 in the twenty-eight chief English towns (including London, in which it was only 16·7), 22·9 in the sixteen principal town districts of Ireland, 15·9 in Edinburgh, and 22·1 in Glasgow. In the case of Dublin, if we deduct the deaths (15 in number) of persons admitted into public institutions from localities outside the district, the rate of mortality in the registration district becomes 24·1, and that of the city itself appears as 27·1.

The deaths from acute febrile zymotics were 123 in Dublin, against a ten-years' average of 139·0 and 106 registered in the previous four weeks. Although still below the average, the mortality from zymotic affections is thus seen to be steadily rising. Included in the above

number are 2 deaths from measles, 29 from scarlet fever, 1 from diphtheria, 15 from whooping-cough, 13 from fever, and no less than 52 from diarrhœal diseases. The fatal cases of scarlet fever rose from 9 in the preceding period to 29. A very severe type of scarlatina anginosa is prevalent, and diffuse cellulitis of the neck is of frequent occurrence in the second and third weeks of the malady. The fever deaths were distributed as follows—typhus, 5; enteric, 7; continued fever of ill-defined type, 1. Among the 15 victims of whooping-cough were 14 children under five years of age, including 7 infants within their first year. Diarrhœal maladies slew 47 children under five years, including 32 under one year old.

In Belfast the deaths from scarlet fever fell from 41 to 28; those from whooping-cough from 12 to 8. In Limerick as many as 5 deaths were ascribed to diphtheria. In Londonderry a very destructive epidemic of scarlet fever killed 25 individuals, raising the zymotic death-rate to 11·6 per 1,000 per annum. The deaths from diarrhœal diseases in the eight Irish towns rose from 74 to 90.

The returns for the Dublin registration district show that 720 births and 664 deaths were recorded in the four weeks. The births included 369 boys and 351 girls. The deaths of children under one year rose from 152 to 163; those of persons aged 60 or upwards from 113 to 139.

In the eight principal towns phthisis or pulmonary consumption caused 170 deaths, against 180 in the previous four weeks. In Cork and Galway there was an increased mortality from this malady, but in the other towns the deaths were less numerous.

Diseases of the respiratory organs were credited with 92 deaths in Dublin, compared with 62 in the preceding period and a ten-years' average of 84·2. These deaths included 58 from bronchitis (average = 54·8) and 18 from pneumonia (average = 12·9).

On Saturday, October 6, the number of cases of the undermentioned epidemic diseases under treatment in the principal Dublin hospitals were—smallpox, 0; measles, 0; scarlet fever, 42; typhus, 31; typhoid fever, 13; pneumonia, 2.

The mean temperature of the period under discussion was 53·2° in Dublin, 53·4° in Belfast, 55·2° at Cork, 55·3° at Greenwich, and 52·3° in Glasgow. These values are slightly below the average.

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of September*, 1883.

Mean Height of Barometer, - - -	29·811 inches.
Maximal Height of Barometer (at 9 p.m. of 11th), -	30·300 „
Minimal Height of Barometer (at 6 a.m. of 2nd), -	28·610 „
Mean Dry-bulb Temperature, - - -	54·7°.

Mean Wet-bulb Temperature, - - -	52·7°.
Mean Dew-point Temperature, - - -	50·8°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·374 inch.
Mean Humidity, - - - - - -	86·8 per cent.
Highest Temperature in Shade (on 24th), - -	66·7°.
Lowest Temperature in Shade (on 12th), - -	41·2°.
Lowest Temperature on Grass (Radiation) (on 12th)	37·6°.
Mean Amount of Cloud, - - - -	52·3 per cent.
Rainfall (on 14 days), - - - -	3·637 inches.
Greatest Daily Rainfall (on 1st), - - -	1·380 inches.
General Directions of Wind, - -	W.N.W., S.E., and Calm.

Remarks.

Rough and unsettled at the beginning and close, this was in general a favourable month—a period of quiet, fine weather lasting from the 9th to the 19th inclusive. The mean temperature was slightly below the average (54·7° compared with 55·5°). The rainfall (3·637 inches) was in excess—the average for September in the previous eighteen years being 2·274 inches. Of the total amount more than one-third (1·380 inches) fell on the 1st. The rainy days were 14, or nearly the average (14·5). Very violent storms occurred on the 1st and 26th, and the wind blew strongly on many days both at the commencement and towards the end of the month.

As a very deep and extensive cyclonic system approached the S. of Ireland on the 1st, rain set in and the wind backed to S., S.E. and E., freshening considerably in the afternoon until at last it culminated in a tempest of wind and rain. At Greystones, Co. Wicklow, 1·696 inches of rain fell in the storm, and the sea ran very high for many hours. At 8 a.m. of the 2nd the centre of the cyclone had reached Pembroke, where the barometer was down to 28·44 inches. In Dublin the reading at 6 a.m. had been 28·61 inches, and the wind moderated and backed to N.E., N. and N.W. as the day wore on. Subsidiary depressions passing eastwards in the wake of this cyclonic system kept the weather in an unsettled, showery, and squally condition for several days; but on the 8th a decided improvement commenced in Ireland. On the 10th and 11th heavy rains fell over the greater part of England, while beautifully bright weather prevailed in this country. An area of high atmospherical pressure at this time spread gradually south-westwards from Northern Europe across the North Sea and British Islands, causing calm, settled weather. Bright sunshine by day was succeeded by copious dews and low temperatures by night, and on the 13th and following days the atmosphere was at times very hazy. On the 16th the extreme differences of barometrical pressure in the United Kingdom amounted only to 0·13 inch—highest, 30·16 inches in London; lowest, 30·03 inches at

Stornoway in the Hebrides, at 8 a.m. At this time great heat was experienced in the daytime in central England, the thermometer rising to 76° and 77° at some stations. On the 19th a wide but not deep depression came in over Ireland, and caused heavy rains and close, dull weather. Next day this system partially filled up and moved away towards N.W. in an unusual direction. Another brief fine spell was followed by a permanent break on the 23rd, from which day onward strong winds and frequent rains prevailed. On the 26th a very deep depression crossed the North of Ireland with great rapidity from W.S.W. to E.N.E., being accompanied with heavy rains and strong gales. In Dublin it blew a whole gale from W.S.W. for some hours, and much damage was done to buildings and to the trees still in full leaf. During the night of the 28th a complex depression with two centres passed quickly south-eastwards across the United Kingdom, causing gales and rains. In Dublin, after a cold, showery, squally night, the wind shifted suddenly from N.W. to N.N.E. at 8 a.m. of the 29th, and much rain fell. Strong cold northerly winds continued to blow, and at night heavy showers fell from massive cumuli along the coast and at sea, as is usual in winter-time, when the wind is N. or N.E.

A solar halo was seen on the 18th. An aurora showed on the night of the 5th. The air was foggy on the 13th and three following days, as well as on the 20th. At Greystones, Co. Wicklow, the rainfall for the month was 4·469 inches, on 16 days.

SUGAR AS AN ANTISEPTIC DRESSING.

Dr. Fischer states that Prof. Lücke, of Strasburg (*Centralblatt f. Chir.*, August 25), has since May last been making trials of sugar as a pulveriform antiseptic. He has used it mixed with equal parts of naphthaline or with a fifth part of iodoform, enclosing it in gauze bags, which are fixed over the wound after the application of sutures. When the skin is defective, the sugar is strewed over the wounded surface. The wound has been disinfected during the operation by means of a one per cent. sublimate solution. The dressing may remain on the part from a week to a fortnight, until the sugar becomes dissolved, the secretions from the wound diffusing themselves equally throughout the sugar. If, however, the sugar is applied too thickly (*i.e.*, more than half a centimetre) it forms into lumps. The wounds thrive under the sugar, the dressing emitting no bad smell nor exhibiting bacteria. The granulations are well developed, having no inclination to bleed, and cicatrisation proceeds rapidly. In wounds united by suture, primary union has always been obtained. The experience thus far gained justifies the recommendation of further trials of a remedy so easy to obtain.—*Med. Times and Gaz.*

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

DIAGNOSIS OF UROGENITAL TUBERCULOSIS BY INOCULATION INTO THE ANTERIOR CHAMBER OF THE EYE.

Some time before Koch's discovery of the bacillus tuberculosis, Damsch sought to make use of the inoculable properties of tubercular material in the diagnosis of doubtful cases of disease of the genito-urinary apparatus. Pursuing this line of investigation he made thirteen injections into the anterior chamber of the eye of the rabbit, using for this purpose, with every precaution observed, the purulent sediment of seven clinically well characterised cases of urogenital tuberculosis, in part of which the diagnosis was confirmed by autopsies. *In every case* there was developed in the course of three or four weeks tuberculosis of the iris. Control-experiments were made with purulent urine from non-tubercular cases of bladder disease in three instances, and in *none* was tuberculosis of the iris produced. Subsequently Rosenstein discovered the bacillus tuberculosis in the sediment of urine from a case of urogenital tuberculosis. Whether or not it is the bacillus which is the infecting agent in these cases, the fact, if such it be, is of the extremest practical importance. For it is well known that we possess no other means of determining certainly the presence of urogenital tuberculosis, and this mode is exceedingly easy of application. Recently (*Deut. med. Wochenschr.*, April 25th) Damsch has again made use of this inoculation method in the diagnosis of doubtful cases of urogenital disease in four cases, with the result of apparently confirming his original conclusions. In each the inoculations were made at the time when the symptoms of the disease were confined to suppurative cystitis. In two cases, iris-tuberculosis was developed in three weeks, and both patients whence the pus was derived developed general tuberculosis, evinced in one case by distinct renal tumour and pulmonary phthisis, and in the other by laryngeal and pulmonary phthisis. In the two remaining cases, the inoculation, though frequently repeated, was without result, the pus disappearing from the anterior chamber in a few days. One of the patients whence the pus was derived recovered from the intense hæmorrhagic cystitis with which he was afflicted, in a few weeks, but the second disappeared from observation before recovery. Damsch also inserted, without effect, into the anterior chamber, large numbers of non-tubercular substances, including uric acid and sodium

phosphate suspended in water, gonorrhœal pus in 6 per cent. solution of chloride of sodium, furunculous pus, non-tubercular peritoneal exudate, lepra products, etc. Similarly abortive were attempts to inoculate the cornea and conjunctiva by numerous injections into them of uric acid in suspension, xanthan, guanin, kreatin, kreatinin, and hippuric acid, alone and in combination with pus. These results are exceedingly important, and in view of the ease with which they can be practised should be early repeated, and the true value of such diagnosis-inoculations ascertained.—*Medical News and Western Reporter.*

ENLARGEMENT OF THE BRONCHIAL GLANDS AS A CAUSE OF IRRITATION OF THE PNEUMOGASTRIC NERVE.

DR. EDWARD T. BRUEN, in the July number of *The American Journal of the Medical Sciences*, discusses the effects of enlargement of the bronchial glands in producing reflex irritation of the pneumogastric nerve. The difficulty in the diagnosis of such cases consists in separating them from cases of early phthisis. One must rely mainly on the absence of the combination of physical signs required to render the presence of incipient phthisis certain. These are impaired percussion resonance, some form of bronchial breathing, possibly fine moist râles and increased vocal resonance. The last two physical signs are not present in cases of bronchial enlargement. Pain in the back and disturbance of the respiratory rhythm are not often present in phthisis. Hysteria, uterine, or spinal disorder, may be eliminated by careful examination. Finally, the beneficial results of treatment may be appealed to to sustain the theory of the ætiology of the cases.

CROTON-CHLORAL IN THE TREATMENT OF WHOOPING-COUGH.

W. C. WEBB, M.D., of Bryantsville, Kentucky (*American Practitioner*, August, 1883), has come to the conclusion, from the treatment of nearly two hundred cases of whooping-cough, that croton-chloral is by far the most valuable single remedy for its relief. He has found that it is well borne by children. To affect the disease it must be given in decided doses. A child twelve months old will bear one grain of the medicine every four hours throughout the twenty-four. During the first week not less than this should be given. Thereafter the cough is usually so much relieved that few, if any, doses are required at night. If the drug be thus pushed to its full effect there are few cases that may not be entirely controlled in a fortnight. The dose for children ten years old should be two grains every four hours; adults will bear only about four-grain doses. The drug thus used does not derange digestion or affect the vital nervous centres. The first few doses may cause some irritation about the throat and fauces, but this soon ceases. The relief is so marked in some cases that patients fall asleep in their chairs. Croton-

chloral, if pulverised, will dissolve readily in compound tincture of cardamoms. The following is a good prescription:—℞. Croton-chloral, ʒ i; tinct. cardam. co., glycerin., āā ℥ ij. M. Sig. One half teaspoonful every four hours, for a child two years old and under. A less expensive and very useful mixture is as follows:—℞. Croton-chloral, ʒ i; tinct. belladonnæ, ʒ ij; tinct. cardam. co., ℥ ij; glycerin., ℥ iij. M. Sig. Dose, one half teaspoonful. If the paroxysms of cough are exceedingly severe, and if there is extreme gastric irritability, the croton-chloral should be preceded by a few whiffs of chloroform. The anæsthetic thus used produces the happiest effects, and it need not be repeated more than two or three times. The combination of bromides with the croton-chloral is of doubtful utility. If any of them are to be used, the bromide of quinine should be preferred. Watchfulness should, of course, be exercised during the use of croton-chloral, lest toxic symptoms should be manifested.—*N. Y. Med. Jour.*, Sept. 22, 1883.

TUBERCLE-BACILLI IN DISCHARGES FROM THE EAR.

THE most recent seat of demonstration of the presence of the bacilli of tuberculosis appears to be the middle ear. Dr. Eschle in the *Deutsche med. Wochenschr.* for July 25th, reports two cases in which the discharge from suppurative disease of the middle ear contained bacilli. In one there was concurrent advanced tuberculosis of the lung. It is interesting to note that the discharge, for several days, presented the appearance of "blue pus," said to have been observed but twice by Politzer in his experience with discharges of the ear. In the second case, that of a boy, although there had been scarlatina, nephritis, diphtheritis and suppurating lympathic glands, physical exploration of the chest gave negative results, and the perforation of the tympanum subsequently closed. Myringitis and otitis externa continued, and bacilli continued to be found in the discharge. The bearing of these observations on the possibility of the existence of tuberculosis of the middle ear—supposing a necessary relation of bacilli to tubercle—is evident.—*Med. News.*

ON THE PATHOGENESIS OF CYSTS OF THE IRIS.

PROFESSOR MASSE, of Bordeaux, has recently communicated to the Académie des Sciences an interesting account of his experiments on the production, by artificial means, of iritic cysts. In 1881 Masse communicated the result of his first series of experiments, which consisted of grafting, upon the irides of rabbits, of little fragments of conjunctiva and of skin, and he then showed that such grafts were frequently followed by the development upon the iris of little pearly epithelial tumours or true cysts. In his recent experiments he has succeeded in grafting fragments of cornea upon the iris. The cornea so grafted produced, within ten days, a veritable cyst with translucent walls and very slight

vascularity about the base of the pedicle. His experiments were all performed on rabbits. The following is his mode of procedure:—Having raised up, with a Beer's knife, a little flap of corneal tissue, four or five millimetres in length, and two or three millimetres in breadth, on a level with the inferior border of that membrane, and having punctured the cornea towards its superior extremity, he introduces the flap into the anterior chamber of the eye. The fragment of corneal tissue soon becomes adherent to the iris, loses its transparency, and becomes vascularised by the aid of vessels coming to it from the iris. In many experiments he has seen, in the region of the graft, true cysts with translucent walls develop themselves, the origin of which must certainly be attributed to the corneal tissue abnormally implanted upon the iris. Such experiments are of great importance in the solution of the physiologico-pathological problem of the ætiology of pearly tumours of the iris in men. When penetrating wounds of the cornea, produced by blunt instruments, are followed by the development of cysts or pearly tumours of the iris, their origin may, he thinks, fairly be attributed to the grafting upon that membrane of portions of tissue—skin, conjunctiva, or cornea—violently introduced into the anterior chamber.

A. H. B.

THE LOCAL TREATMENT OF ACNE SIMPLEX AND ROSACEA.

In a recent thesis, an abstract of which we find in the *Journal of Cutaneous and Venereal Diseases*, M. Morin says that this can be satisfactorily carried out only by direct action upon the malady at its original seat. The following is the method devised and recommended by the author:—He takes a fine darning-needle, having an eye somewhat longer than that of a sewing-needle. Holding this by the point, he introduces it into the affected gland by a rotatory movement, which causes some of the sebaceous matter to lodge within the eye of the instrument. The latter is withdrawn, cleansed, and reintroduced, and the operation is repeated once or twice until, the gland being emptied, its floor is touched by the needle, when a slight pricking sensation is experienced. The same needle, or another similar one, held in the same way, is then dipped in an alcoholic solution of iodine—of greater or less strength, but never weaker than that of the French pharmacopœia—and is again passed into the gland, charged with a drop of the iodine tincture, which is thus brought into immediate contact with the focus of the disease. After a few minutes a clear liquid, slightly coloured by the iodine will exude from the gland, sometimes in a drop as large as a tear. This flow will cease within an hour. Twenty-four hours later, in cases of acne simplex, the inflammation, when unaccompanied by suppuration, will have wholly disappeared. If suppuration, however, had existed, it will be found perceptibly diminished, needing only two or three repeti-

[illegible] process to effect its entire cessation, followed by a permanent [illegible] being of a more intractable character, requires the [illegible] to be made several times, when results equally favourable [illegible] be obtained. The advantages claimed for this mode of [illegible] over any local measures previously employed are: that it is [illegible] : produces no additional disfigurement; is painless; [illegible] the seclusion of the patient, and may be relied upon [illegible] cures even in cases otherwise hopeless.—*N. Y. Med.* [illegible] 1883.

[illegible] FOLLOWING EXTERNAL USE OF BORACIC ACID.

[illegible] *Med. News* of August 25, 1883) the case of a man [illegible] admitted into the (Philadelphia) City Hospital for a [illegible] of the right thigh, of long standing. [illegible] the outer surface of [illegible] and subsequently of a lotion [illegible] of the hot iron, [illegible] powdered boric acid was [illegible] for three days [illegible] This treatment [illegible] and renewed during the day. [illegible] Diarrhoea and vomiting then set in, and [illegible] five days. [illegible] the last application of the acid. The prominent [illegible] inflammation, giving rise to [illegible] a clear intellect up to the last, along [illegible] pulse, low temperature, and [illegible] the reaction of the blood [illegible] Unfortunately the details of the post mortem are given [illegible] The [illegible] of the stomach and [illegible] congestion of the [illegible] and inflammation [illegible] and deep congestion and microscopically [illegible] The liver was enlarged, and [illegible] had lost their polygonal [illegible] contained an increased number of [illegible] of the hepatic artery and [illegible] along with the [illegible] almost to abscess [illegible] granular and swollen.

[illegible] AND [illegible]

[illegible] of the cervical [illegible] These cases [illegible] in many cases [illegible] of the cases [illegible] was improved and the head [illegible] and *Medical News* [illegible]

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

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THE DUBLIN JOURNAL
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DECEMBER 1, 1883.

PART I.

ORIGINAL COMMUNICATIONS.

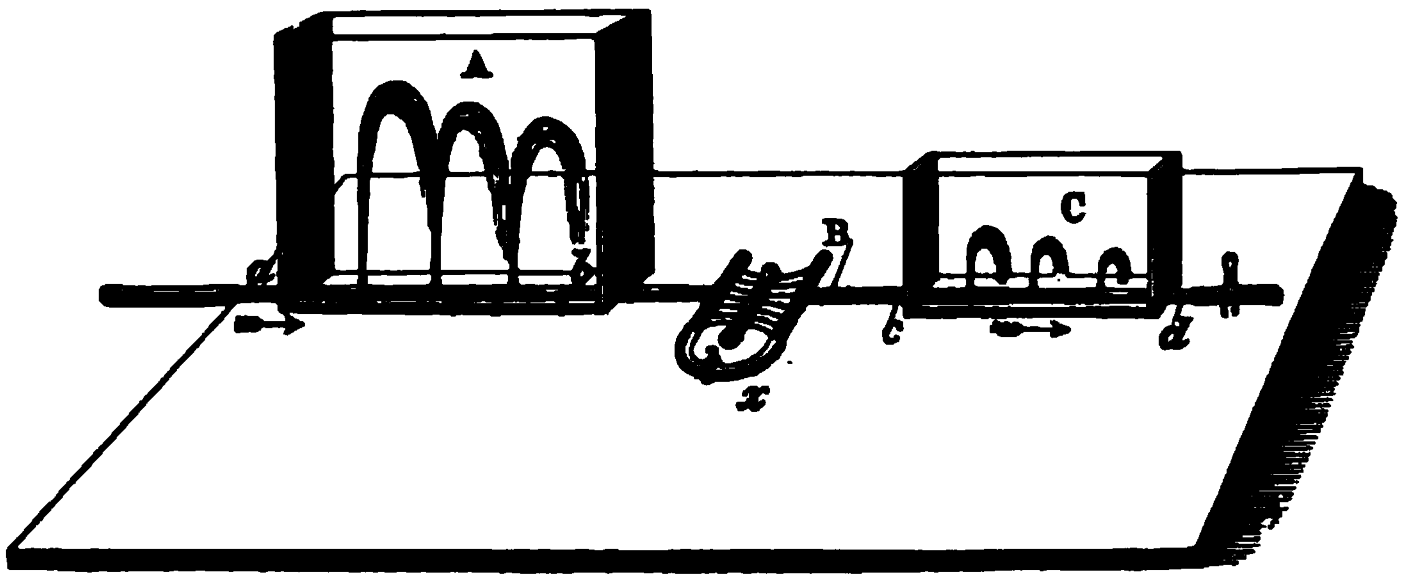
ART. XIV.—*A New Artificial Schema for showing the Relations between Arterial and Venous Blood-pressure.* By C. YELVERTON PEARSON, M.D., M. Ch.; Senior Demonstrator and Lecturer on Anatomy, and Demonstrator of Practical Physiology, Queen's College, Cork; Assistant-Surgeon to the Cork North Infirmary, &c.

WHILE engaged in demonstrating practical physiology, I have often felt the want of a suitable apparatus for illustrating the relations between arterial and venous blood-pressure. No doubt that of Dr. Burdon-Sanderson illustrates nearly all the points required, but it is somewhat objectionable, as it is difficult when using it to prevent an occasional overflow from the proximal tubes; also to keep the vertical tubes free from air-bubbles, which interfere with the level of the fluid in them; and unless coloured fluid be used, the height of the liquid in the various tubes is not visible to a large class.

The instrument I am about to describe will be found free from the above objections, while it possesses some distinct advantages, as I shall endeavour to show; still it must be regarded to a certain extent as a modification of Dr. Burdon-Sanderson's schema.

The apparatus consists of two troughs, A and C, each of which is about 2 feet long and 6 inches wide, A being 2 feet high, while C is only 1 foot. Each trough has glass sides, the ends and bottom being made of wood. Placed along the bottom of each trough is a horizontal brass tube $\frac{3}{8}$-inch in diameter, *a b*, *c d*, the

extremities projecting 1 inch through the ends of the troughs; these tubes do not run over the centre of the bottom boards, but are placed close to the nearer side; each tube has three small



apertures on its upper surface, from which fine tubes extend, almost vertically, for about 1 inch, but have a slight inclination away from the observer. The tubes *a b* and *c d* are connected by an intermediate system of tubes, B; these are similar to those used in Dr. Burdon-Sanderson's apparatus, and consist of two tubes of the same diameter as *a b* and *c d*, to which they are connected at right angles by short elastic tubes: they are joined to each other by a number of fine elastic tubes furnished with a compressing clamp, and also one extremity of each is connected with that of the other by a large elastic tube, *x*. This can be left open, or closed by a compressing clamp, as required. Placed on the end of the tube marked *d*, is a short elastic tube furnished with a spring clip for diminishing the outlet. The tube in A represents the arterial system, that in C the venous, and the tubes marked B the capillaries or arterioles.

To use the apparatus, connect the end of the tube marked *a* with a water tap, by means of an elastic tube, and allow the water to enter gradually at first, pass through the various tubes, and make its escape at *d*, where it flows into a receiver. When all the air is expelled, increase the supply of water until the pressure in the tube is sufficient to raise a jet of water from the tube nearest *a*, nearly to the top of A. Jets will also rise from the various small tubes in A and C, and as these tubes have a slight inclination away from the observer, the jets will fall against the far sides of the troughs. The object of this is to prevent the jets falling back on themselves, and thus diminishing their height. The water which falls from these jets is conveyed from the troughs by a tube leading out of the bottom of each, which is not shown in the

diagram. It will now be seen that the jets proceeding from the various tubes diminish in height the nearer they approach *d*, so that the highest jet in C is less than the lowest in A. These facts serve to illustrate:—

1. That the arterial blood-pressure diminishes as the distance increases from the heart, which is here represented by the water-tap.

2. That the venous pressure diminishes as the distance from the heart gets less.

3. That the lowest arterial pressure is more than the greatest venous.

4. That the pressure in the capillaries must be less than in the arteries, but greater than in the veins.

The above conclusions may be stated in the form of a general law—viz., that, *cæteris paribus*, the blood-pressure in any given vessel is *inversely* proportional to its distance from the propelling force, as measured back through the circulation.

If the tube *x* (having been open) is suddenly compressed, or if the small tubes marked B are compressed, the jets in A will all rise higher, while those in C will fall. From this it is seen that an increase in the peripheral resistance, such as contraction of the arterioles, causes a rise of arterial and a fall of venous blood-pressure.

The above results can all be shown in Dr. Burdon-Sanderson's schema, but mine can be made to illustrate something additional—viz., the variations in arterial pressure due to the heart's beat. To show this, place an elastic bulb, provided with a valve, between the water-tap and *a*. One similar to that of a Higginson's syringe will answer, but should have a larger bore; this permits a continuous flow through it, and when compressed causes the jets to rise in succession, indicating the passage of the pulse-wave. Further, if a long piece of elastic tube be placed between *b* and the small tubes B, and sufficient peripheral resistance be employed to call its elasticity into play, it will be found that when the bulb is compressed the jets in C will not rise to any extent, though those in A continue to do so. This shows the influence of elasticity in the arteries, in causing the pulse-wave to disappear before reaching the veins.

For illustrating to a large class, a piece of black paper, with white horizontal lines ruled on it, should be placed behind each trough, so as to make the jets visible at a distance, and afford a means of comparing their relative heights.

The apparatus has been made, under my direction, by Mr. Lund, of this city; and I feel certain that anyone who employs it for lecturing purposes, will find it superior to those already in use.

ART. XV.—*Clinical Note on Enteric Fever.*[a] By J. W. MOORE, M.D. Dubl.; Fellow and Registrar K.Q.C.P.; Physician to the Meath Hospital and Co. Dublin Infirmary, and to Cork-street Fever Hospital.

THE bibliography of typhoid, enteric, or—as it is now often called—pythogenic fever, has of late years become so copious and exhaustive that, although the field of observation of this form of specific continued fever unfortunately enlarges year by year, the opportunity for original research in connexion with it is being gradually confined within more and more narrow limits. Accordingly, in the present clinical record of an interesting case of enteric fever, I at once disclaim any pretensions to novelty or originality, in regard either to the interpretation of the phenomena of the disease or to the principles upon which its treatment are based.

Briefly summarised, the case which I am about to report was one of severe enteric fever, running a course of four weeks, characterised by a succession of high temperatures during the first twenty days, ataxic symptoms, obstinate constipation, hypostatic congestion of the lungs, and right basic pneumonia. Furthermore, treatment of a decidedly active kind was employed, and apparently with marked benefit to the patient. On five separate occasions twenty grains of quinine were given as an antipyretic in two quickly succeeding doses of ten grains each; twice the wet "pack" was employed for two hours at a time to control the pyrexia; and on three occasions, at intervals of forty-eight hours, ten-grain doses of calomel, guarded with a grain of opium, were administered as an antiseptic aperient.

This may well be considered heroic treatment for enteric fever. But those who are familiar with my practice at Cork-street Hospital will do me the justice of inferring that I had good grounds for departing from the ordinary management of this treacherous form of fever by intelligent nursing, hygienic measures, and careful dieting.

[a] Read before the Medical Section of the Academy of Medicine in Ireland, Friday, November 16, 1883. [For the discussion on this paper, see page 500.]

Without further preface I now proceed to detail the case, and, in doing so, beg to express my acknowledgments for many of the clinical notes to Mr. William Moyle O'Connor, the resident clinical clerk at Cork-street Hospital, and to Mr. Macnamara, the pupil in charge of the case. The observations on the pulse and respirations were taken once daily, about 11 o'clock each forenoon. The temperature was recorded by the nurse twice a day, between 10 and 11 a.m., and about 7 p.m.

Case.—Michael G., aged twenty, assistant in a grocer's and general purveyor's establishment, was admitted into Cork-street Fever Hospital on Saturday, September 29, 1883. He had been ill for eight days before admission, but had kept his bed for only six days. He resided in Lower Mecklenburgh-street, an unhealthy and ill-drained district of the city—at all events so far as house-drainage is concerned. Previously to admission, his most urgent symptoms were—persistent headache, loss of appetite, thirst, and a general weakness. He also suffered from constipation and flatulency.

On careful examination no rose-spots were detected, and although the area of splenic dulness was somewhat enlarged, the symptoms were considered insufficient for a positive diagnosis of the nature of the fever to be made—the "totality of typhoid" was wanting. The patient was accordingly placed in one of the Observation Wards—as Mr. O'Connor remarks, "those truly useful wards"—with a view of watching the development of the disease without exposing the patient to any risk of infection.

September 30th (ninth day).—Morning—Pulse, 104; respirations, 34; temperature, 103·0° F. It had been 103·4° the evening before. He had passed a rather restless night; still his headache was much better. Expression languid, but wanting the heavy stupid look of typhus. The skin was hot and dry. Tongue moist, but thickly coated with a creamy fur, and already inclined to fissure; papillæ enlarged. Bowels confined. Abdomen slightly tympanitic; no tenderness. One or two rose-spots on abdomen. Heart not strong, and generally an aspect of prostration. He was ordered a simple enema, which acted once; and was put on a mixture containing digitalis, strychnia, nitro-hydrochloric acid, and chloroform water. Beef-tea and milk diet. In the evening the thermometer in the axilla rose to 104·8°.

October 1st (tenth day).—Morning—Pulse, 100; respirations, 36; temperature, 103·2°. Evening temperature, 105·4°.

2nd (eleventh day).—Morning—Pulse, 98; respirations, 40; temperature, 104·4°. No action of the bowels since the evacuation caused by the enema. With the object of controlling the hyperpyrexia twenty grains of quinine were ordered to be taken in solution in hydrobromic

acid in two equal doses of ten grains each, at 3 p.m. and 6 p.m. And to act on the bowels, a bolus containing ten grains of calomel and one grain of opium was at once administered. At the same time a "glycerine poultice" was applied to the abdomen. As regards poulticing in enteric fever, I have quite given up the application to the abdomen of heavy linseed-meal poultices, in favour of the following:—A piece of lint of suitable size is moistened with a warm mixture of laudanum (one fluid drachm), glycerine (seven fluid drachms), and water (seven fluid ounces), and laid over the abdomen; oiled silk or gutta-percha paper is then applied, over which is placed a sheet of French wadding or cotton wool—the whole being kept in position by a soft flannel roller or bandage. This "glycerine poultice," as it may be called, is at once comfortable and efficient. After the bolus, the bowels acted once—the stool being partly formed and partly soft.

3rd (twelfth day).—Morning—Pulse, 96; respirations, 38; temperature, 101·0°. Last night the temperature was 104·0°, compared with 105·4° the previous evening. He was now coughing a good deal, and the relative quickness of the breathing—no longer to be accounted for by the high fever—led me to make a careful examination of the chest. Slight dulness over the base of both lungs posteriorly, and a fine crepitation in the same situation warranted the conclusion that a passive congestion of some moment was in progress. The physical signs were more marked on the right side, which was in consequence freely dry-cupped and afterwards poulticed. During the day some true pneumonic sputa came up, apparently from the right base. In the evening the temperature rose again to 105·2°, and next morning it was still as high as 104·0°. This being so, the calomel and opium bolus and the quinine were given as on October 2nd. In the evening the thermometer marked only 103·0°, falling still further to 102·6° early the following day.

6th (fifteenth day).—Morning—Pulse, 88; respirations, 32; temperature, 103·8° (the same reading as on the evening before). There were partial dulness on percussion and bronchial breathing over the middle of the right lung posteriorly. The calomel and quinine were given for the third time, with the effect that the temperature fell to 103·0° in the evening and to 101·6° the next morning, and that in the succeeding twenty-four hours four "watery" stools occurred.

7th (sixteenth day).—Morning—Pulse, 86; respirations, 30; temperature, 101·6°. Dry cups were applied to the right back, and followed by poultices. In the evening the temperature ran up to 105·4°.

8th (seventeenth day).—Morning—Pulse, 84; respirations, 30; temperature, 103·2°. Bronchial râles heard generally. Pupils dilated. Two soft stools. Slight deafness, but no other symptom of quinism. On the afternoon of this day twenty grains of quinine were given for the fourth time, but the calomel was not repeated, as the bowels were acting

sufficiently. In the evening the temperature declined to 102·6° and next morning still further to 101·2°. On the evening of the same day (October 9), however, there was a marked recrudescence of the fever, the thermometer marking 104·9°. This hyperpyrexia continued, the succeeding observations being—

10th (nineteenth day).—Morning—Pulse, 96; respirations, 30; temperature, 103·2°. Evening temperature, 105·7°.

11th (twentieth day).—Morning—Pulse, 96; respirations, 30; temperature, 104·0°. At 2 p.m. the patient was wrapped in a wet blanket and packed for two hours. He was also given four ounces of port wine. While in the "pack," profuse diaphoresis occurred, and excessive thirst was complained of. The temperature fell to 103·0° in the evening and to 102·4° next morning, rising subsequently to 103·8°.

13th (twenty-second day).—Morning—Pulse, 102; respirations, 40; temperature, 103·4°. Wet "pack" for the second time from 3 to 5 p.m. Wine increased to six ounces. Antipyretic effect of the "pack" on this occasion small, temperature being the same afterwards as in the morning—namely, 103·4°. Complained of weakness. Three-grain doses of quinine were now added to the digitalis and strychnia mixture, which he had been taking pretty regularly.

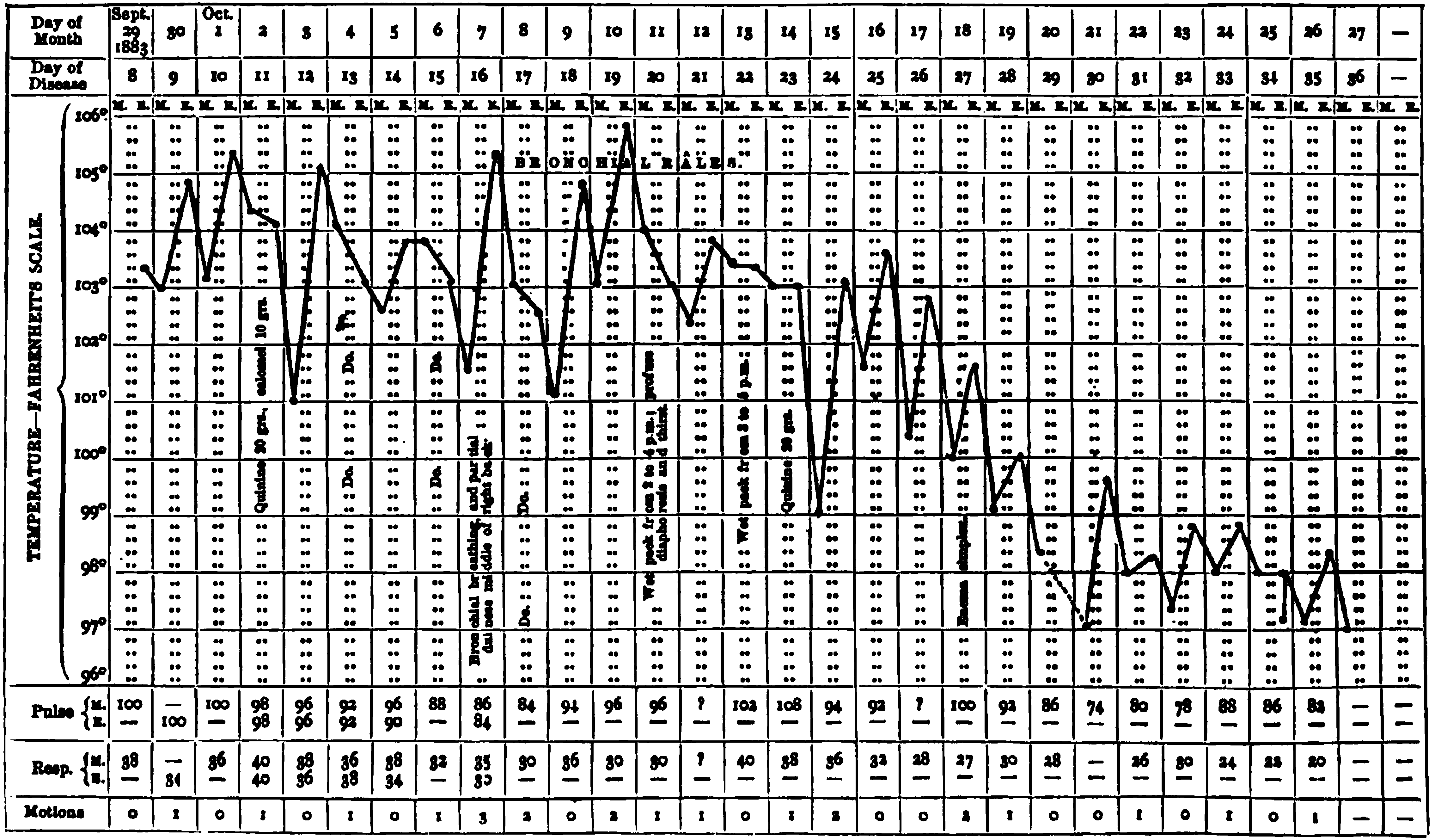
14th (twenty-third day).—Morning—Pulse, 108; respirations, 38; temperature, 103·0°. Ordered a final twenty-grain dose of quinine—the fifth—which just held the temperature in check towards evening. Next morning, however, there was a sudden fall to 99·2°; pulse, 94; respirations, 36. The back and front of the chest were now rubbed with compound camphor liniment, which relieved the breathing and assuaged the cough. Towards evening the temperature rose to 103·0°.

16th (twenty-fifth day).—Morning—Pulse, 92; respirations, 32; temperature, 101·6°. Aspect of patient rapidly improving. Tongue moister and less fissured. Towards night temperature rose to 103·6°.

18th (twenty-seventh day).—Morning—Pulse, 100; respirations, 27; temperature, 100·2°—a rapid improvement taking place. As the bowels had been confined for two days a simple enema was given, which brought away a good deal of fæcal matter in two stools. Convalescence now went on apace, and without a drawback; the temperature ranging between 97° and 99°, except on the evening of the thirtieth day (October 21), when it ran up to 99·6° in consequence of constipation. On October 20, the allowance of wine was reduced to four ounces, and on October 23, to two ounces. On the 27th, he was permitted to have a little butter and a baked-custard; and on November 1, the wine was stopped, and he had a little piece of chicken for dinner, his tongue being moist and clean. At this time he began to sit up every day. He remained in hospital until to-day (November 16), when he left for the country, apparently in the enjoyment of perfect health.

CLINICAL CHART OF TEMPERATURE, PULSE, RESPIRATIONS, &c.

Name, Michael G.; *Age*, 20; *Disease*, Enteric Fever; *Result*, Recovery.



The antipyretic effect of quinine in large doses is too well known and appreciated to need any remarks from me. I may, however, be permitted to observe that, in my experience, the small doses recommended by Niemeyer—two grains, in solution in dilute sulphuric acid—cannot be relied on in cases of hyperpyrexia. And again, if a large dose is to be given, hydrobromic acid is a suitable solvent, and one which will probably prevent, or at least postpone, quinism. Should the patient be very weak, however, it is advisable to use hydrochloric, nitric, or sulphuric acid in preference.

As to the abstraction of heat by the wet pack, the results are dubious so far as benefit to the patient is concerned. The temperature is, indeed, reduced, but at a cost of the patient's strength. G. complained greatly of exhaustion on both occasions when the wet pack was used. As Niemeyer says—"It would be proper to compare the action of an energetic abstraction of heat to that of excessive exercise—then it will be asked if it be advisable to subject an already exhausted patient to this action."[a]

He adds that he had not observed this state of exhaustion since he employed the following plan recommended by von Ziemssen:—As often as the patient's temperature rises above 104° he is placed in a bath, the temperature of which is about 10° below that of his body, or about 94°. While the body and limbs are gently rubbed, cold water is gradually added until the temperature of the bath is reduced to about 68°. The patient is to remain twenty or thirty minutes in the bath, until he is slightly chilled, and then to be placed quickly in a warm bed. At first four or five baths daily are necessary, subsequently only two or three.

The administration of calomel in large doses in enteric fever is nothing new, and is much thought of in Germany at all events.[b] "After the accurate observations of Wunderlich," says Niemeyer,[c] "we can scarcely doubt that by this remedy we may, in some few cases, cut short the disease (according to Wunderlich one or two five-grain doses are enough), and that in the great majority of cases where this remedy is given during the first week, and before the occurrence of much diarrhœa, the course of the disease is rendered milder and shorter. The experience of Pfeufer's clinic, as well as my own, perfectly agrees with Wunderlich's. We shall

[a] Text-book of Practical Medicine. Revised Edition. Vol. II. P. 651. London: H. K. Lewis. 1880.

[b] Cf. Von Ziemssen's Encyclopædia of Practical Medicine. Vol. I., Acute Infectious Diseases. Page 200.

[c] Loc. cit. P. 647.

not attempt to say whether the calomel has a favourable influence on the typhous intestinal disease by opposing the sloughing and ulceration, and whether, consequently, we can expect benefit from it only in the first weeks of the disease, when these changes have not yet taken place."

Niemeyer's observations have recently gained additional weight in an unexpected and interesting manner. Dr. Wassiljeff (*Jeschner klin. Gaz.*) has studied experimentally, in Hoppe-Seyler's laboratory, the influence of calomel on fermentation and bacteria. He found that the presence of one part of calomel in from twenty to one hundred parts of fibrin or fat, did not interfere with the action of the unorganised ferments of the saliva, gastric juice, and pancreatic juice; but the calomel did prevent the formation of certain decomposition products—as indol, phenol, skatol, creasote, and hydrogen sulphide. The calomel also prevented butyric acid fermentation. The action of calomel upon bacteria or micrococci was next studied, according to the Buchholtz-Wernick method. It was ascertained that the drug destroyed these organisms and prevented the appearance of new ones. From this it seems that calomel destroys organised ferments, but is without effect upon the unorganised ones. So far, all the experiments had been outside the body. Now, experiments were made on three dogs. They were given one grain of calomel each, and after some hours were killed. The intestines were ligated in the upper part of the duodenum and in the lower part of the colon, and the entire contents were carefully examined. In no case could the putrefactive products, indol, skatol, hydrogen sulphide, &c., be detected. It would seem from this that much of the good which calomel is known to accomplish in various intestinal troubles is due to its aseptic properties.[a]

Remembering, then, these aseptic or antiseptic properties of calomel, I felt no small degree of confidence in prescribing it in combination with opium—itself an antiseptic—in a case where persistent constipation during an attack of enteric fever, characterised by very high temperatures, was only too likely to lead to the formation of decomposition products in a diseased intestine. At the same time, to avoid all misapprehension, it will not be foreign to the purpose of this clinical record to note, in conclusion, that the treatment of ordinary typhoid cases is, in our hands,

[a] The Physician and Surgeon, and Dublin Journal of Medical Science for October, 1883. Page 327.

at Cork-street Hospital, based on common-sense principles. We carefully diet the patients, and give them little medicine. The routine dietary for an adult patient is from two to three pints of milk, and a pint of good beef-tea or chicken broth, daily. Experience proves that this is probably as much as can be assimilated during a fever, the diseased processes in which are so commonly and in so special a degree connected with the intestinal tract. Great attention is paid to cleanliness about the invalid's person and bed. In convalescence, solid or irritating food is withheld—often for many weeks, and when leaving the hospital the convalescents are cautioned against indiscretions in diet.

TUBERCLE INFECTION THROUGH FOOD.

We translate the following notice, by Wernich, from the *Centralblatt, f. die med. Wissenschaften* for Nov., 10th:—In the *Bayerisches ärztl. Intelligenz-Blatt*, 1883, No. 26, Herzerich reports the history of two girls, sisters, aged respectively fifteen and three months, who after being nursed by an undoubtedly phthisical mother—the first for five months, the second for three—were reared and fed on soup, milk, and pap. The mother adopted the following disgusting method of feeding:—She first chewed the food herself, then spat it out into a spoon, and gave it to the children. So long as she had little expectoration the children bore this feeding well; but so soon as her expectoration became abundant, although the children continued to take their food with appetite, they both rapidly emaciated; ulcers formed in the throat and insides of the cheeks, some large and of irregular shape, others small and round, both with infiltrated edges; and extensive swelling of the lymphatic glands occurred. Severe fever, putrid diarrhœa, and progressive atrophy, caused the death of both children within a month of one another. The *post mortem* appearances were the same in both. All the mediastinal lymphatic glands were swollen and caseated; caseous nodules occurred under the pleuræ and scattered throughout the lungs, also in the liver, spleen, and of smaller size in the kidneys—in other words, there was present *tuberculosis pulmonum, hepatis, renum et lienis, lymphadenitis caseosa.* The mother survived the children for some months, and died after extensive destruction of the lungs had occurred. It is worthy of remark that her children by a former marriage showed no sign of phthisis; also that the two children in question, so long as they were suckled by a comparatively healthy mother, remained themselves healthy. As the author says—"This important case has all the value of a pathological experiment, and must be considered as a pure case of tuberculosis derived from infected food (eine reine Fütterungstuberculose)." J. M. P.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Filaria Sanguinis Hominis, and certain new forms of Parasitic Disease in India, China, and Warm Countries. By PATRICK MANSON, M.D., Ch.M. London: H. K. Lewis. 1883. 8vo. Pp. 186.

THE greater part of this most interesting volume is occupied with a description of the parasite named by Lewis *filaria sanguinis hominis*, and of the morbid conditions produced by its presence in the body. Although this species of worm does not occur in this country, yet its frequency in India, China, and other parts with which we have close relations is so great that a connected account of it, given by one who has taken so large a part in the investigation of its life-history, cannot fail to awaken the interest of every pathologist and physician.

Of the practical importance of a knowledge of the filaria diseases Dr. Manson says:—

"Wherever elephantiasis is endemic this parasite is to be found. Elephantiasis is endemic over half the globe—at least over that part of the globe where the major part of mankind resides. This parasite produces a group of diseases, very common in these countries, which, though not commonly fatal, do sometimes kill, and always give rise to much pain, deformity, and inconvenience. It is in our power completely to prevent the access of the animal to the tissues of man, and thereby prevent these diseases; and this desirable result can be attained by the simplest of means."

We must confine ourselves in the following notice to a brief account of the chief points in the history of these diseases and their causation, referring for details of great interest to Dr. Manson's work itself.

The embryonic or immature form of the *filaria sanguinis hominis* was first discovered in 1866 by Wucherer, who found it in chylous urine. In 1872 it was found in the blood by Lewis, who gave it the name it now bears.

"This embryo, when examined by the microscope, is seen to be a long, slender, snake-like, gracefully-shaped animal, possessed of an activity so great that, until paralysed by approaching death or inspissation of the medium it lies in, measurements and observations of structure can hardly be made. It measures about $\frac{1}{90}$ inch, by $\frac{1}{3500}$ inch, is perfectly transparent, and apparently structureless. The anterior part of the body tapers slightly, and at its very extremity a panting movement, as if of breathing, is to be detected. Posteriorly the body tapers down to a fine point, the extreme end of which, in most specimens, has the look of being articulated, for this part does not always harmonise with the general curve of the body, but seems bent at an angle. In some individuals a brown aggregation of granular matter can be detected about the centre of the body, half way between head and tail. An extremely delicate sac encloses the animal, fitting it accurately; but as this sac is about one-third longer than the body, it is unoccupied and collapsed into the semblance of a lash at the head or tail, or both, according to the position or direction of movement of its contents. If the animal is rushing forward, the anterior part of the sac is occupied, and a long lash of collapsed sac dangles from the tail; if the animal is retreating, tail first, then this part of the sac is occupied, and the superfluous integument trails after the head."

It was not until several years after the discovery of the embryo that the mature parent worm was first found by Bancroft, in Australia, in 1876. It has since been found in India by Lewis, in Brazil by Araujo, and in China by Dr. Manson. Fragments only of the male worm have as yet been got, and since these have always been found associated with the female it is probable that the sexes live together. As is the case in most filariæ, the male is considerably smaller than the female.

"The latter is a long, slender, hair-like animal, quite three inches in length, but only $\frac{1}{100}$ inch in breadth, of an opaline appearance, looking, as it lies in the tissues, like a delicate thread of catgut animated and wriggling. A narrow alimentary canal runs from the simple club-like head to within a short distance of the tail, the remainder of the body being almost entirely occupied by reproductive organs. The vagina opens about $\frac{1}{25}$ inch from the head; it is very short, and bifurcates into two uterine horns, which, stuffed with embryos at all stages of development, run backwards nearly to the tail. Under the microscope fully-formed embryos, just as we see them in the blood, can be seen escaping from the vagina. The animal is therefore viviparous."

The parent worm has been always found in the lymphatic vessels, and there can be no doubt that this is its normal

habitat. Living here the young are born, and in consequence of their minute size, they readily follow the current of the lymph, and experience no obstruction in the lymphatic glands, but find their way through the thoracic duct into the blood, where they circulate in incredible numbers, causing in many cases no inconvenience, so that their presence can be detected only by microscopic examination of the blood.

When a large number of such examinations are made of the blood of an infected person, it is found that the number of filariæ present is not always the same, but that while sometimes the parasites are very numerous in every drop of blood examined, at others they are altogether absent, or very few. By extended and patient observation, continued over long periods, Dr. Manson arrived at the remarkable discovery that a regular law governs the numbers of the filariæ circulating in the blood. This law is, that the parasites disappear during the day, and reappear at night, having thus a diurnal periodicity :—

> "It will be found that during the day, unless under peculiar circumstances, they are entirely absent; that about six or seven o'clock in the evening, with "military-like" punctuality, as Cobbold expresses it, they march to their night quarters; gradually, as night advances, their numbers increase; by twelve o'clock as many as 100, or even more, may be counted in every drop of blood. About this time their numbers reach their maximum, and then, as morning approaches, they become fewer and fewer; by eight or nine a.m. they entirely disappear. From nine a.m. to six p.m. very rarely is it possible to procure a single specimen."

Since its discovery this remarkable filarial periodicity has been confirmed by all observers who have directed their attention to the point. Its occurrence explains why the presence of the parasite in the blood so long escaped observation, as microscopic observations are usually made by day, at a time when the blood is free from filariæ, even in infected individuals.

At first it seemed that the regularity of the periodicity in the appearance and disappearance of the worms was disturbed by fever, and by this only, but Dr. Stephen Mackenzie, of London, who had recently an opportunity of observing, in a case of chyluria, the behaviour of the filariæ, discovered that the periodicity could be reversed by altering the habits of the patient as regards sleep, and that if he were kept awake all night, and made to sleep during the day, the filariæ appeared in the blood by day and

vanished during the night. Hence a relation between the time of sleeping and the appearance of filariæ in the blood is shown; but it is not sleep which causes the appearance of the worms, for they begin to show themselves long before the occurrence of sleep, and begin to disappear before waking. Further, Dr. Manson found that when a patient is kept awake for two or three days the regular periodicity is not disturbed. Prolonged sleep, maintained by chloral, somewhat disturbed the periodicity and lessened the number of filariæ at the time of maximum. A similar result was obtained when the usual allowance of eight hours' sleep was taken in two spells of four hours each, at intervals of eight hours. Changes in the time of eating had no effect on the periodicity.

A very interesting and important question at once presents itself. What becomes, in the daytime, of the crowd of filariæ which are present in the blood at night? It has been supposed that towards morning the worms exhibited languor in their movements and other signs indicative of approaching death, and the conclusion has been drawn that each morning all the parasites die and are replaced in the evening by a fresh brood. Dr. Manson found that both morning and evening parasites lived equally long after removal from the body, and hence thinks it unlikely that the former are destined to speedy death within the vessels. He has made some experiments which are of much interest in connexion with this question. In China the dogs are commonly infested by the *filaria immitis;* the parent worms live in the cavities of the heart, while the embryos circulate in the blood. There is a certain periodicity in the number of the embryos present, although these are never altogether absent, as is the case in man. Two filarious dogs were killed at the time when the worms were very few in the blood taken from the ear. After death the different organs were examined, and while the parasites were comparatively few in most parts, they were present in enormous numbers in blood taken from the lungs. From this the author concludes that the parasites do not die when they cease to circulate in the blood, but that they accumulate and come to rest in certain organs. While their resting-place in the dog would seem to be the vessels of the lungs, it is not known where they hide themselves in the human subject. Blood aspirated from the spleen of a filarious patient during the day was free from parasites, as was blood expectorated from the lungs in a case of hæmoptysis occurring also in an infected patient.

In the human body the embryo filariæ do not appear to underg any development, nor do they pass from the body by any of the secretions. But a remarkable discovery has been made by Dr. Manson, which not only throws light on the further history of the parasite, but also offers an explanation of its nocturnal appearance in the circulating blood.

The geographical distribution of the filaria coincides with that of the mosquito; and it was found that the female of a particular species of this insect, when sucking the blood of an infected patient, removes, entangled in her proboscis, large numbers of filariæ, which are subsequently transferred to her stomach. After filling herself with blood (which is always done at night), the mosquito—

"Retires to some shady place—if possible in the vicinity of water—and during four or five days is occupied in digesting her single meal and maturing her ova. When this is completed she betakes herself to the water, and on the surface of this deposits two little boat-shaped masses of eggs. After effecting this she dies."

Many of the ingested filariæ undergo digestion in the stomach of the insect or are expelled in the fæces:—

"A favoured few, however, survive and enter on a very interesting metamorphosis. First, the hitherto smooth and perfectly structureless body becomes marked by delicate and closely-set transverse striæ, as if from general longitudinal shrinking; and the bag in which it has hitherto been tightly enveloped appears separated from it by an appreciable interval, and possibly finally disappears. Then the striæ lose their distinctness, and the body of the animal seems as if it became broader, shorter, and filled with a fluid containing granular matter and exhibiting to-and-fro movements. The extreme tip of the tail—probably that portion of it described as if articulated to the rest of the body—does not partake in the general broadening, but looks like an appendage stuck on to the sausage-shaped mass; at short intervals it exhibits sudden and vigorous movements of flexion and extension. By-and-by minute cell-like bodies appear, and arrange themselves along a line now beginning to be visible in the centre of the cylinder, and opening near, but a little in advance of the tail at one end, and at the semblance of a mouth at the other. At this stage the animal is perfectly passive, and its caudal appendage shortens and disappears. Growth now commences, and with growth a swaying movement of the anterior part of the body. As growth progresses movement increases, and finally, when the little animal has attained a length of about $\frac{1}{50}$ in., it exhibits prodigious activity, rushing forwards and backwards indifferently, and thrusting every

obstacle aside. If by pressure we restrain its movements, or fracture its delicate body, its head is seen to be crowned with three or four nipple-like papillæ; an alimentary canal is visible running from mouth to anus, and rudiments of generative organs can likewise be traced."

By the time this metamorphosis is completed the mosquito is dead. The filariæ then escape into the water, and their further history is unknown. It is most probable that they are taken into the human body with the drinking water, and, boring their way through the walls of the stomach, enter a lymphatic vessel, along which they travel towards the peripheral parts, where they undergo their further development, and where the remainder of their existence is passed.

Although there is a serious gap in our knowledge of the complete life-history of this parasite, yet still what we do know shows two important things—firstly, the cause of the nocturnal appearance of the embryo in the blood, which is to suit the night-flying habits of the mosquito; and, secondly, the practically all-important fact that it is through water the human body is infected, so that by care in either boiling or filtering the water, or in protecting it from the access of mosquitos, it may be reasonably hoped that the filaria diseases can be stamped out.

In countries where the filaria is endemic, as Southern China, rather more than one in every ten persons are infected by this parasite. A large number of these enjoy undisturbed health; and this immunity from symptoms of disease is enjoyed also by animals, who also are very commonly the hosts, each of its own kind of blood parasites. Thus, in China, half the dogs, all the magpies, a very large proportion of the crows and many other birds and beasts, contain in every drop of their blood vast numbers of hæmatozoa, but suffer no inconvenience. In the case of the human beings who are affected Dr. Manson finds that the liability to invasion continues all through life, so that the filariæ are more common in old persons than in young; that occupation has no influence on the liability to infection, the only class which apparently enjoys immunity being those who follow a seafaring life. Too few women have been examined to allow of any certain conclusion being drawn as to the influence of sex; but, so far as it appears, women are as frequently infected as men.

Why so many of those who are infected enjoy, notwithstanding, good health is intelligible when we consider the small size of the embryo filariæ. Owing to this they can pass through the narrow

paths of the lymphatics and blood-vessels, and cause obstruction neither in the lymphatic glands on the one hand, nor in the blood capillaries on the other.

But, while many filarious patients experience no inconvenience, others suffer from a peculiar group of morbid symptoms, which are all attributable to the presence of the parasite. These symptoms are—attacks of intermittent fever occurring at irregular and often very long intervals; inflammations of the lymphatic vessels and lymph-glands; the condition called by Dr. Manson "lymph scrotum," characterised by enlargement of the lymphatic vessels of the scrotum, which may burst, and discharge lymph containing filaria embryos; elephantiasis of the legs, scrotum, or both; chyluria; or two or more of these affections combined. Since among those persons whose blood is free from filariæ these affections are absent or exceedingly rare, while they are common among those who harbour the hæmatozoon, it is most probable that these diseases and the filaria are somehow connected. For the clinical evidence in support of this connexion, and of the theory of the causation of these diseases which we are about to give, we must refer to Chapters V. and VI., where the question is fully considered and numerous cases are recorded at length.

The theory is as follows:—Lewis has observed that the filariæ, while still contained within the body of their parent, do not burst the chorion, but stretch this membrane, which, as the worm elongates, becomes a sheath for it. Manson has not had an opportunity of studying the intra-uterine development of the *filaria sanguinis hominis*, but finds, from a series of observations on the *filaria corvi torquati*, a hæmatozoon which inhabits the pulmonary artery of the common crow of Southern China—a process of development similar to that described by Lewis in the case of the human parasite. Now, if the filaria ovum, which measures $\frac{1}{500}$ in. by $\frac{1}{750}$ in., is set free before the stretching of the chorion is far advanced, or, in other words, if the parent worm aborts, an embolic plugging of the narrow passages in the lymphatic glands must result, since the diameter of the ovum is five times greater than that of the fully stretched-out embryo. The continued discharge of immature ova causes at last obstruction of all the lymphatics leading from the part where the parent worm is situated, and so gives rise to the various morbid conditions described above, and which are all due to mechanical plugging of the lymph-paths. Manson has in two cases found ova in the

lymph, and Cobbold and Salisbury have found them in the urine, so that there is evidence in support of this very ingenious theory of elephantoid diseases—"that the parent parasite is the prime cause, premature birth of the ovum the second, and impaction of the lymphatic glands by the ova the immediate cause." For the full argument in its support we must refer to the chapters already mentioned.

Of the means by which prevention of these diseases may be attained we have spoken above. If Dr. Manson's theory be admitted—

"The impossibility of permanent and thorough cure of elephantiasis is apparent. Much may be done by the knife to remove deformity, and elastic bandaging and other devices for aiding the lymphatics still patent, and the blood-vessels to carry off stagnant fluid; but permanent cure of the established disease is impossible."

In Formosa and Japan a peculiar form of hæmoptysis is endemic. The hæmorrhage is intermittent, and accompanied by cough. Together with the blood, or alternating with it, small pellets of brownish viscid mucus are expectorated. Violent exercise, or whatever tends to irritate the lungs, increases the expectoration of blood or mucus. When the sputum is examined microscopically, it is found to contain large numbers of ova, oval in shape, with one end cut off, and shut in by an operculum. The ova measure $\frac{1}{300}$ by $\frac{1}{300}$ in. When ruptured, they give exit to oil globules and granular matter.

These ova are produced by a distoma which has been found only once. It was discovered by Dr. Ringer, of Tamsui, Formosa, in the lung of a patient who had died of thoracic aneurysm. The parasite was found lying on the cut surface of the lung, but its exact habitat in this organ, whether in the air-tubes or in the blood-vessels, was not determined. The ova found in this unique specimen of the mature animal agreed in every respect with those expectorated by patients who suffer from the endemic hæmoptysis. The parasite was examined by Dr. Cobbold, who named it after the discover, *Distoma Ringeri.*

Dr. Manson made a number of experiments in order to determine, as far as possible, the life-history of this distoma, and found that the expectorated ova, if placed in water after being washed free from mucus, produced in from six weeks to two months ciliated embryos, which, escaping from the shell, moved rapidly about in the fluid. That a similar development occurs under

ordinary circumstances cannot be doubted. The later stages are unknown, but it is almost certain that a further metamorphosis is undergone in the body of some fresh-water animal, and that the parasite is taken into the human body with water either while still contained within its intermediate host, or after it has again become free. From these considerations it is clear that in those countries where the distoma in question is endemic, much caution is required as to the quality of the water used for drinking, which should in all doubtful cases be boiled or filtered.

The exact localisation of the parent fluke in the lungs is still uncertain, but on the supposition that its habitat was in the bronchi, Dr. Manson treated two cases of endemic hæmoptysis by inhalations of atomised fluids. In one of these a cure appears to have been effected.

It would seem that, beyond the inconvenience of the cough, no serious results follow invasion of the lungs by the distoma.

In Chapter VIII. Dr. Manson gives a description of a parasite belonging to an order not previously found in the human subject. It was examined by Dr. Cobbold, who considered it new, and named it *Ligula Mansoni.* Of this animal twelve specimens were found in the body of a Chinaman who had suffered from filariæ in the blood, lymph scrotum, and elephantiasis scroti, and who died after operation for these diseases. The ligulæ lay in the areolar tissue behind the kidneys, in the sub-peritoneal areolar tissue, in the flanks and iliac fossæ, and one specimen lay free in the right pleural cavity. Each was of dead white colour—measured twelve to fourteen inches in length, one-eighth of an inch in breadth, and one-sixtieth in thickness. The extremities were rounded. To the naked eye it presented no markings. With the microscope it was seen that one extremity was lipped, and in the other was a short longitudinal slit. The whole of the body was occupied by a vast number of clear spherical bodies, each having a double or treble outline, and distinct nucleus; these were held together by a loose, fibrous matrix, and very thin, transversely striated integument. No trace of alimentary or generative organs was found. The pathological significance, if any, of this parasite is unknown.

In the last chapter we find a description of a new form of parasitic skin-disease common in the Straits of Malacca and Islands of the Malay Archipelago. From the imbriated arrangement of the scales which occur in this disease, Dr. Manson has given it the name of *Tinea imbricata.* An accurate account of the clinical

history of the disease, and of the fungus to which it is due, is given, together with a report of inoculation experiments, and a discussion of its relation to tinea circinata and chloasma. But for these we must refer to the original, as our notice has already extended to too great a length to allow of our giving an intelligible abstract. We may say, however, that in his account of this disease, as in the other chapters of his remarkable book, the author gives the highest evidence of patient and honest work, of sobriety of judgment, and of originality of thought. His work is one of a kind of which there are too few at present, and which cannot be too highly commended. The volume contains ten well-executed plates and a good index.

Lectures on Orthopædic Surgery and Diseases of the Joints. Delivered at Bellevue Hospital Medical College during the Winter Session of 1874–75. By LEWIS A. SAYRE, M.D. Second edition. Revised and greatly enlarged, with 324 illustrations. London: J. & A. Churchill. 1883. Pp. 569.

THE speciality of Dr. Sayre is sufficiently well known to make the work before us one of especial interest. Thoroughly master of his subject, he deals with it in an exhaustive manner, whilst at the same time his style is pleasant, and the writing easy and readable. Interested himself in his subject, he excites the interest of the reader, and keeps the attention from flagging to the end. Throughout the book there are many useful and practical suggestions for the treatment of affections, with which every practitioner is or ought to be familiar. As an orthopædic work, the volume before us promises to take its place amongst standard works on the subject, and will prove most useful as a book of reference.

The lectures, or chapters, which form the book, are thirty-two in number. The first is taken up with the history of orthopædy. The word itself he prefers to derive from ὀρθὸς, *straight*, and παιδεύω, *I educate*, as being more comprehensive than Andry's derivation from ὀρθὸς and παιδίον, *a child*, and more correct than to derive the second part of the word from *Pes*, *a foot*, as other authors have done.

In the second lecture we find a classification of deformities, which seems to us to be a good one. In the following nine chapters he deals with deformities of congenital origin—malformations and distortions. The rest of the book is devoted to acquired deformities—

Diseases of the Joints, Curvature of the Spine, Genu Valgum and Varum, &c.

In the treatment of deformities arising from contracted muscles Dr. Sayre advocates the *constant* application of an elastic force, moderately but persistently applied. This, though more tedious than tenotomy, will be "infinitely better for the future usefulness of the limb involved." When, however, the muscle has undergone "structural shortening," or, as he prefers to express it, when the muscle has become *contractured*—that is, when it has become changed in its anatomical structure, and "rendered incapable of elongation, either by the will of the patient or the application of any amount of force short of rupturing its fibres. . . . Section of the contractured tissues becomes necessary before a permanent cure can be effected" (p. 14). The question then naturally arises—"How are we to determine, in any given case, whether we shall be compelled to resort to tenotomy?" Dr. Sayre thus answers the question (p. 35):—"Place the part contracted as nearly as possible in its normal position, by means of manual tension gradually applied, and then carefully retain it in that position. While the parts are thus placed upon the stretch, make additional point pressure with the end of the finger or thumb upon the parts thus rendered tense, and if such additional pressure produces *reflex contractions* that tendon, fascia, or muscle must be divided, and the *point* at which the reflex spasm is excited is the point *where* the operation should be performed. If, on the contrary, while the parts are brought into their normal position by means of manual tension gradually applied, the additional point pressure does *not* produce reflex contractions, the deformity can be permanently overcome by means of constant elastic tension, and the more you cut the greater will be the amount of damage." This advice, coming from an orthopædic surgeon of such repute, should carry weight with surgeons generally. Were these rules carried more universally into practice we should not so often find tendons divided which are merely in a condition of reflex spasm, nor should we sometimes have to deplore operative interference in cases where deformity is produced not by the contraction or the "contracture" of any muscle, but by a paralytic condition of the muscles opposing the one operated on.

At pages 50 and 51 we feel that a certain amount of criticism is justifiable. In the former of these pages we find drawings of a pair of deformed feet, one possessing ten toes, the other eight; and side by side are drawings of perfectly normal feet of five toes each,

which do not present even the remnant of a cicatrix. Twenty-three days after operation we are told "the second casts were taken from her feet, from which the *improved* drawings were made." We quite agree with the author that the *drawings* were very much improved, and the same may be said of the drawing of the hand on page 51, and of several of the other illustrations throughout the book.

Lecture VI. contains a good deal of original matter, and is of very great interest. It deals with some special causes of reflex paralytic deformities. We believe the author of this book was the first to point out the relation that sometimes exists between the excitation of the genital organs caused by a congenital phimosis and adherent prepuce, and a partial paralysis accompanied by deformity. In the present work the importance of bearing in mind this important relation is forcibly impressed upon his readers, and many very interesting cases are reported. The author then leaves the male sex, and at page 62 he observes:—The same general disturbance takes place in the female from irritation of the clitoris; to illustrate which, and the results secured from clitoridectomy, I quote the following cases:—

The first was that of a girl aged nine years. Her condition is hus recorded:—"A stout, well-nourished girl, both gastrocnemii are contracted, the flexors of the great toes also being shortened; cannot stoop down without being thrown forward. Has great muscular rigidity of thighs, so that the hips cannot be flexed or the thighs opened. *Pressure on the clitoris causes spasmodic contraction* of the muscles of the lower extremity. I clipped off the end of the clitoris. The clitoris was then cauterised and dressed with cold water." Eleven days afterwards the report states:—"Returned perfectly well; can flex thighs and move all joints normally."

In the second case the girl was aged eight years, and had never been able to walk. "On examination, found the clitoris very much congested, and the slightest touch produced spasm of the whole body." Clitoridectomy was performed, and in three months the child could walk a long distance with the use of crutches.

In the third case the child was aged five. Excision of the clitoris proved equally beneficial. These cases are very instructive, and suggest the importance in these paralytic cases of examining either the penis or the clitoris as the case may be, as the cause of the disease may be readily ascertained by the spasmodic condition of

the muscles induced by friction or pressure over the clitoris or penis.

Nearly a hundred pages are devoted to talipes. It would be impossible to give anything like a summary of this portion of the work, consisting as it does of an account of the varieties of talipes, records of cases, and descriptions of various boots and other mechanical apparatus.

In Chapter XII. the author begins the subject of diseased joints, and this portion of his work we strongly recommend from the clearness of the style and the practical spirit which pervades it. In dealing with the "twist, wrench, sprain, or bruise" of the ankle this is particularly observable, and it is evident that the author does not consider it as of such small importance as to be passed over in silence, or with the contemptuous apology of a short paragraph, as we are too frequently accustomed to see in surgical works. "Generally speaking," he says, in concluding this subject, "the slighter the accident the more apt to be neglected, but these are the very ones which are exceedingly dangerous."

In advanced cases of disease of the ankle joints, where the cartilages are encased, the bones carious, and the joint full of pus, Dr. Sayre advises making an early opening into the joint to avoid burrowing and the formation of long tortuous sinuses. He dissents altogether from the "old-established doctrine of the great danger of opening a joint." "Of course no one would dream of opening a joint so long as there was a probability of the integrity of the articulation." Evidently Dr. Sayre is not a believer in antiseptic surgery, or he is ignorant of what is done under the "spray and gauze" treatment. Otherwise he would know that the opening of a joint in the early stages of disease, where the "integrity of the articulation" is more than a probability, is not only dreamt of but practised every day successfully. Still we agree with him in his next sentence: "But when the articular surfaces are wholly or in part destroyed, then, I say, the characteristics of a joint are also destroyed; there remains nothing but an abscess of a joint, which is to be treated in the same manner as an abscess elsewhere, or, more exactly, as an abscess of bone."

The author strongly disapproves of excision of either the ankle or wrist joints. His reasons are, besides the difficulty of the operation, the danger of injuring other structures, such as vessels, nerves, and tendons, or of destroying the periosteum, which would defeat the chief object of the operation, the regeneration of bone,

and the formation of a movable joint." He prefers a kind of scooping operation. Into the sinuses already existing he passes a kind of periosteal knife or elevator, which he formerly called an oyster knife from its shape:—"The blades are strong and wedge-shaped, the edges not being sufficiently sharp to cut the soft parts." With it he enucleates the diseased bone without fear of lacerating the vessels, periosteum, or other important soft parts:—"Make your excavation thoroughly, seeking to remove not only all the dead bone, but especially the gelatinous matter so abundant in these diseased joints. . . . Now, I draw completely through the joint, and also through the other sinuses, a large seton of oakum, saturated with Peruvian balsam, letting the ends extend beyond the ulcers for several inches." The limb is now fixed by an anterior splint of plaster of Paris, from which arms extend around the foot and leg below and above the wound, so as to leave the latter entirely free for daily dressing. "When the plaster has 'set,' envelop the joint with a thick pad of oakum, filling with it the fenestræ in the plaster dressing, and bandage the foot and ankle as firmly as possible. . . . The seton will be moved daily, and the soiled part cut off; you can easily twist on more oakum, and thus continue it as long as necessary, and what *débris* of carious bone has been left behind will be drawn out entangled in the fibres of the oakum."

Several cases are recorded to show how this operation is followed by regeneration of the bones and movable joints; but unfortunately we are not told what the relation is between failures and recoveries, or whether in all cases a movable ankle joint resulted.

The author lays great stress upon the importance of not removing the setons too early. In some of his cases they were retained for ten or eleven months before he considered it safe to remove them.

A similar method of treatment Dr. Sayre rcommends in cases of knee-joint disease, where the mischief is limited in extent, and where the only other alternatives must be excision of the whole joint or amputation of the limb. This method, he says, he has practised for twenty years, and he is gratified to find that it is beginning to filter into England. To show this he gives a quotation from a paper in the *Lancet*, by Mr. Bryant of Guy's Hospital, "On the Least Sacrifice of Parts as a Principle in Operative Surgery," but the method in which the quotation is given evidently implies that Dr. Sayre does not consider that the credit of priority in this manner of treatment has been given to him.

Appended to some excellent chapters on hip disease and its

treatment, we find a table of all Dr. Sayre's cases of exsection of the hip-joint, with a synopsis of them.

The table comprises seventy-two cases of exsection for morbus coxarius, of which sixty-three recovered, "nine only dying from the exhausting effects of hip disease. Forty-seven of these cases are now alive." Ankylosis resulted in but two cases. This is a very satisfactory table, and very creditable to Dr. Sayre. Its value is the more enhanced, that he gives the full name and address of every one of the seventy-two cases.

The latter part of the book deals with curvature of the spine and spondylitis. The author's method of treatment is fully detailed, but as this has been prominently before the profession for some time past we need not refer to it here. Altogether the book is full of instruction and interest. In reading it we regret to find that in many places it is marred by a spirit of egotism and self-laudation. Extracts from letters, the gist of which is the estimation in which the writer holds the author, or the wonderful and unexpected results he has achieved, are more suited for a volume of testimonials than for a scientific work, and the object of their insertion is unattained, for they detract from the value of the work and from the merit of the author.

On the Pathology of Bronchitis, Catarrhal Pneumonia, Tubercle, and Allied Lesions of the Human Lung. By D. J. HAMILTON, M.B., &c. London: Macmillan. 1883. 8vo. Pp. 248.

THIS work consists of two parts. The first treats of bronchitis—the second of catarrhal pneumonia and tubercle. The first part opens with a description of the structure of the normal bronchi and their surroundings. The epithelium of the bronchi is described as consisting of three layers—a superficial layer of columnar, ciliated cells; an intermediate layer of pyriform or battledoor-shaped cells, which do not reach the surface; and a third or deepest layer of flat cells. In this last layer active germination occurs, and from it are derived the cells of the two more superficial layers. The author looks on the flat cells of his third layer as identical with those which form the so-called sub-epithelial endothelium described some years ago by Debove. He considers that the single layer of flat cells which lines the alveoli and infundibula of the lung is an extension into these parts of the deep cells of the bronchi, while the more superficial cells of the bronchi

are something superadded to the typical layer of flat cells which originally lined the whole respiratory tract. The pseudo-stomatous cells of Klein are supposed by Prof. Hamilton to be identical with his battledoor cells, and he suggests that Klein's figures are diagrammatic. A similar suggestion may surely be made to some of the drawings of Professor Hamilton. We have never seen such an appearance as that which is delineated in Fig. 2, where the superficial epithelial cells are separated from one another at their free ends by empty intervals more than one-half the breadth of the cells themselves.

The epithelium rests on a perfectly homogeneous and hyaline basement membrane. This is a structure of great importance, as it forms an impermeable barrier between the epithelium and the deeper parts.

Under the basement membrane are, in succession, the inner fibrous, the muscular, and the outer fibrous coats. This last is continuous with the adventitia of the larger branches of the pulmonary artery, and also with the interlobular septa of connective tissue which pass into the lung from the deeper layer of the pleura.

Not only are the superficial cells of the bronchial epithelium derived from the deep layer of germinating flat cells, but from the same source the mucous corpuscles are made to arise, while the fluid part of the mucus is furnished by the mucous glands.

Before commencing the study of acute bronchitis, the effects of congestion of the bronchi are considered. The author uses the term *mechanical* congestion in a somewhat peculiar sense. He says:—"I shall consider as mechanical those congestions which do not produce a continuous further change in the bronchial wall, but which, if the cause be removed, tend to resolution; and as inflammatory those which are accompanied by further changes of a secondary nature, resulting in the formation of what we know as inflammatory products." As a typical example of acute mechanical congestion of the bronchi is given the condition which is found in persons who die from an over-dose of opium. Here, in addition to distension of all the vessels, there is found œdematous thickening of the basement membrane, infiltration of the fibrous coats, with emigrated leucocytes and desquamation of the epithelium. That this desquamation is not due to putrefaction is shown by some experiments in which portions of lung were soaked in liquor amnii and exposed to the air in a warm place until they were in

an advanced stage of putrefaction, and all this without causing any separation of the epithelium from the walls of the bronchi. We think the results of these experiments will find little confirmation from the experience of other anatomists.

It is found that in acute bronchitis the inflammation, although it has a tendency to spread, does not usually involve the whole bronchial tract, but that a somewhat artificial division can be made into "tracheo-bronchitis where the lower part of the trachea and the larger bronchi are the main source of the catarrhal fluid, bronchitis proper where the medium-sized bronchi are chiefly implicated, and capillary bronchitis where the smallest-sized bronchi are the chosen seat, the last being usually accompanied by more or less acute catarrhal pneumonia, due to the extension of the inflammatory process to the alveolar wall."

In acute bronchitis the earliest change consists in dilatation of the blood-vessels in the inner fibrous coat. This is soon followed by œdematous thickening of the basement membrane, followed by desquamation of the epithelial cells. This latter process is limited to the superficial ciliated cells, which never show any evidence of active change. The lower layers persist and germinate vigorously, but produce only cells of an embryonic character, which, until the inflammation has ceased, never develop into normal ciliated cells. It is maintained strongly that the cellular elements of the altered bronchial secretion are derived from the surface epithelium, and in small part from the mucous glands, but not at all from the parts below the basement membrane, which are completely shut off from the surface by this structure. In these deeper layers numerous cells are found; these are in part emigrated leucocytes, but to a great extent are produced by proliferation of the endothelioid cells which cover the connective-tissue bundles of the fibrous coats. These cells never reach the surface of the bronchi, but extend themselves along the fibrous septa of the lung and adventitious coats of the bronchi and pulmonary arteries, and are in favourable cases finally removed by way of the lymphatics. Desquamation and mucous degeneration of the cells of the ducts and alveoli of the mucous glands, swelling of the bronchial lymphatic glands and blocking up of the lymph paths by catarrhal-like cells, hæmorrhage into the walls of the bronchi, and congestion of the nerve-trunks and ganglia in the bronchial walls, complete the anatomical changes seen in acute bronchitis.

When recovery occurs, the congestion diminishes, the prolifera-

tion of the epithelium becomes less active, and normal ciliated cells are again formed, while the cellular infiltration of the fibrous coats is removed by the lymphatic vessels.

The subject of chronic bronchitis is divided according as the disease is due (*a*) to an acute attack, (*b*) to valvular disease of the heart, (*c*) to inhalation of foreign matter, (*d*) to chronic interstitial nephritis. In (*a*) it is found that the epithelium shows the same proliferation as was noticed in acute inflammation, and the growing cells do not develop beyond the embryonic stage of round or spindle-shaped elements. The basement membrane is intact, but often thickened. In the deeper layers the blood-vessels and lymphatics are much distended, and the muscular coats of the arteries greatly thickened. There is a dense cellular infiltration of the fibrous coats, due to diapedesis of leucocytes and proliferation of the connective-tissue cells. These cells are shut off from the surface by the basement membrane, and forced to wander outwards into the interstitial tissue of the lung itself. The muscular coat of the bronchi, which in acute bronchitis is not much altered, is here frequently atrophied, and to this enfeeblement of the muscular coat is due the frequent dilatation of the lumen of the bronchi. In cases where this dilatation does not exist, the muscular coat is often hypertrophied. The pieces of cartilage in the walls of the bronchi are frequently atrophic, and are seen to be undergoing absorption. Mucous degeneration, desquamation of epithelium, infiltration of small cells, sometimes amounting to abscess, are found in the mucous glands; and atheroma of the middle-sized branches of the pulmonary artery, sometimes associated with fatty metamorphosis of the fibres of the myocardium, are not uncommon in chronic bronchitis.

(*b*) Chronic bronchitis, following valvular disease of the heart, is characterised by the enormous dilatation of the small blood-vessels. To these and the consequent œdema, the thickening of the walls of the bronchi is due, the small-celled infiltration found in true inflammation being absent. The epithelium of the bronchi has desquamated, or is in an embryonic condition. Many air vesicles are filled with desquamated epithelium and blood, forming patches of brown induration, and spots of hæmorrhagic infarction are common.

(*c*) In the lungs of coal-miners the pigment which is found consists chiefly of particles of coal, but partly of smoke from the oil lamps. In such lungs the walls of all the bronchi, except the very

smallest, are found free from pigment, and the secretion contained in their lumen and the expectoration before death contain no pigment, but are yellow and muco-purulent. Owing to the firm basement membrane, the foreign particles are unable to penetrate the walls of the large and middle-sized bronchi, and it is through the very smallest tubes and through the infundibula and alveoli that the pigment gains access to the lung. Having penetrated the walls of these parts, it fills the peri-bronchial and peri-vascular lymphatics, and the lymphatic glands at the root of the lung. It is found in the interlobular septa and in the deep layers of the pleura, but the superficial layers of the pleura, having their own system of lymphatics, are free from pigment. The bronchitis which accompanies anthracosis is brought about indirectly. The pigment compresses the blood-vessels, and blocks up the lymphatics. Owing to this, the circulation experiences such an impediment as to give rise to œdema of the bronchial walls. This causes such a condition of irritation that the normal growth of epithelium is interfered with, and the imperfectly formed cells desquamate and furnish the cellular element of the muco-purulent secretion.

(*d*) In the bronchitis accompanying advanced Bright's disease the coats of the arteries are greatly hypertrophied, but, except in this, the appearances do not differ from those seen in idiopathic bronchitis.

Among the complications of bronchitis, chronic interstitial pneumonia is one of the most common and most important. Here we find the pleura thickened and continuous with strong fibrous bands, the greatly thickened interlobular fibrous septa, which traverse the lung and are attached to the walls of cavities formed of dilated bronchi. In these, which have an irregular contour, the epithelium is more or less altered, the basement membrane persists, but the cartilage and muscular coat have undergone atrophy. The air vesicles are in great part obliterated. Those which persist have greatly thickened walls, and in many of them the epithelium has lost its normal flat shape, and is formed of cubical cells. In the condensed fibrous tissue the blood-vessels are numerous, but many of the arteries are narrowed by a thickening of their internal coat (arteritiis obliterans). In consequence of the obliteration of many of these vessels, cheesy patches result from deficient blood-supply. These, softening, form ragged cavities, which are often mistaken for ulcerated bronchi. In addition, true tubercles occur in the pleura, in the thick fibrous tracts, and in the

walls of the bronchi. The whole process is referred to an inflammatory irritation of the lymphatics, due to the accumulation in them of the products of inflammation formed primarily in the mucous membrane of the bronchi, and which cannot discharge themselves into the cavity of the air tubes, in consequence of the resistance offered by the firm basement membrane. The dilatation of the bronchi is caused by the retraction of the newly-formed inflammatory cicatricial tissue, which acts from the pleura—that is, the chest wall, as a fixed point, and drags open the bronchial tubes, which yield more readily than do the ribs and intercostal spaces.

Another complication of bronchitis is vesicular emphysema. The author explains the occurrence of this by the expiratory theory. He supposes that in the expiratory efforts of cough the blood is forced out of the heart and large vessels, and the space thus gained in the interior of the chest is filled up by over-distension of the air vesicles. It is only in cases where extensive collapse of portions of the lung has occurred that the negative inspiratory force is efficient in causing emphysema. The collapse itself is explained on the usual theory of the ball-valve action of masses of catarrhal secretion inhaled into the smaller bronchi.

In some cases a dilatation of the bronchi occurs without there being any interstitial pneumonia to explain its occurrence. In these cases the walls of the bronchi are thin and smooth, and are expanded into fusiform or saccular cavities. In the former case the dilatation is mainly due to efforts of cough, and is accompanied by emphysematous expansion of the air vesicles. In the saccular form there is usually extensive collapse of the air vesicles, caused by obstruction of many small bronchi; those which still remain open undergo expansion from the atmospheric pressure during inspiration. The accumulation of catarrhal secretion in the bronchi may also help to cause their dilatation.

The second part of the work opens with a good anatomical description of the structure of the alveoli of the lungs, but in which there is not anything very new. This want of novelty is, however, made up for in the second section, which is "On the Effects of increased Blood-pressure suddenly applied to the Blood-vessels of the Lung." Here we have a mechanical theory of croupous pneumonia of such an astounding character that it is difficult to understand how it could ever have entered into the mind of any sane pathologist. The theory is somewhat as follows:—The surface of the air cells are much exposed to irritation

from changes of temperature, inhalation of foreign bodies, &c. The primary effect of irritation is to cause, by a reflex action, spasm of the arterioles. If the irritation be slight or soon removed, the spasm gives way, and the circulation is restored; but if the stimulus be severe or long-continued, the blood becomes so "inspissated" in the capillaries and veins that when the arteries at length relax, the blood refuses to move forward. If this condition be widely extended, gangrene results; but if the obstruction of the capillaries occurs only here and there, "an increased strain will be thrown on the vessels, or parts of vessels, which are still pervious, and *the tension of the blood within them will consequently be raised.*" In consequence of this increased pressure on the vessels, the pores in their walls become widened, and the fluid parts (albumen, &c.) exude, and having caused desquamation and death of the epithelium of the alveoli, solidify as fibrin, the dead epithelial cells acting as the determining cause of this fibrin formation. Here we would remark parenthetically that a few pages earlier the author states that in croupous inflammation, "when the false membrane is removed, the underlying surface is found to be unbroken, and comparatively healthy." Not only do the fluids transude, but also the corpuscles, which are forced through the widened pores mechanically by a process which the author illustrates by ingenious experiments with pieces of gelatine suspended in fluid which is forced through a perforated tube, or exposed to pressure in a dialyser. The matter transuded into the air vesicles is further condensed by the movements of respiration, which express the fluid parts into the lymphatics, and leave the air cells occupied by the solid material found in hepatisation. As to the phenomena of resolution the author says little. He disputes the justice of the term inflammation to pneumonia, denies it any specific character, and explains the whole process as one of a purely mechanical nature, and due merely to a supposed acute stoppage of the circulation.

Now, the objections to such a theory as this are so obvious that they will occur to the mind of everyone who has seen half a dozen cases of pneumonia, or who is acquainted with pathology as distinguished from mere pathological anatomy. In the first place, Prof. Hamilton takes no account of the fever which commences before the changes in the lung manifest themselves, ceases before there are any signs of resolution, and runs so regular and constant a course that no unprejudiced mind can

refuse to recognise in it a fever as specific as that of measles or scarlatina. Secondly, it is notorious that inhalation of irritating matters does not cause croupous pneumonia. Foreign bodies, when inhaled, cause chronic bronchitis, catarrhal pneumonia, and fibrous induration of the lung; and statistics show, what is borne out by the experience of every physician, that it is not during the cold time of the year, when bronchitis is rife, that pneumonia is most common, but in the spring and early summer. Further, it is impossible to understand why substances inhaled, which must act equally on both lungs, should cause a disease which is, according to the large statistics of Jürgensen, bilateral only in 8·07 per cent. of the cases, and which is confined in such a large proportion of instances to a single lobe. The supposition of the author that the exudation settles to the lower part of the lung by gravity before it solidifies, is not the least grotesque part of his theory, and will not explain the localisation even when this is in the lower lobe. Again, all the results of experiments are against the view that stoppage of some of the pulmonary vessels materially increases the blood-pressure in the others. Lichtheim has found that the entire of one division of the pulmonary artery and a great part of the other may be completely obstructed before the pressure in the main trunk is materially increased, so feeble is the tonus of the pulmonary vessels, and these results have been confirmed by subsequent observers. We, of course, do not question the statement of Prof. Hamilton that he has seen croupous pneumonia occur in connexion with fat-embolism of the pulmonary vessels, but we can state positively from our own observation that this connexion is not constant, as we have seen many cases of fat-embolism in which there was no fibrinous exudation in the lungs. Finally, taking for granted the mechanical conditions supposed, where should the transudation of fibrin and corpuscles take place? Surely in the arteries or capillaries, for once the blood had cleared the latter vessels, it should flow easily through the progressively widening veins. But anyone who has ever repeated Cohnheim's celebrated experiment on the frog's mesentery, knows that it is from the veins that the principal emigration of corpuscles, and presumably of plasma, takes place. If the corpuscles were mechanically forced through the walls of the vessels, they should exude in the proportions in which they exist in the blood, but in inflammation the number of red corpuscles which leave the vessels is very small as compared with the white. When the pressure in

the interior of a vascular area is suddenly raised by obstruction of the principal vein, the phenomena witnessed are very different from those seen in a croupous inflammation. The plasma which is transuded remains fluid, and forms a dropsy, not a fibrinous exudation; the red corpuscles are forced through the vessels in larger number than the white; the contents of the veins and capillaries become so "inspissated" that these vessels are filled by a mass of corpuscles without intervening fluid, and so closely packed that their outlines are indistinguishable; and yet, after this condition has persisted for many hours, on removal of the venous obstruction the mass of corpuscles breaks up, and in a very short time the circulation is restored. These considerations make us think that the mechanical theory of croupous inflammation is one which will not meet with much acceptance.

Not as a corollary, but as a further proof of his theory, the author adduces the effects of treatment. "Notwithstanding all that has been said to the contrary, and in spite of the prevailing *fashion* of the present day, I believe that venesection is the one sovereign remedy in this disease." The object of venesection is to reduce the vascular tension, which is manifested by the "hard, wiry pulse" of pneumonia. Now, it is pretty well admitted by pathologists that venesection will not permanently reduce arterial tension unless it is pushed to a point dangerous to life. But putting this objection aside, we would ask how obstruction of vessels in the lung could cause increased tension in the systemic arteries, and give rise to a hard, wiry pulse? Throughout the vessels are considered as if they were dead tubes in which obstruction of one artery could not be compensated by dilatation of another, but even on this supposition, if obstruction takes place in the lungs, it should have the effect of emptying the systemic vessels. In conclusion, we believe that a little clinical experience of acute croupous pneumonia would convince the author that venesection is not such a sovereign remedy as he supposes, and would very possibly lead him to take a very different theoretical view of the disease to that which he now puts forward.

As an example of the effects of increased blood-pressure *gradually* applied, the condition of the lungs in chronic mitral disease is taken. A good description of the vascular dilatation, brown induration, epithelial desquamation, &c., is given. The cause of the difference between the effects of sudden and gradual increase of vascular tension is to be sought partly in the fact that in the

latter the circulation is only slowed, and does not anywhere undergo complete stasis; but chiefly in the power which the vessels have to accommodate themselves to the gradually increased strain and the capacity of the lymphatics to carry off any increased transudation.

Catarrhal pneumonia is divided into three stages—1. Acute or sub-acute stage. 2. Caseation. 3. Phthisis or destruction of the lung.

The description of the first stage is that of acute lobular pneumonia. The only point of much novelty in it is the derivation of the proliferated epithelium which fills the alveoli exclusively from the small granular cells which form part of the lining of these cavities in the natural condition, while the larger thin plates which complete the alveolar epithelium are merely cast off, and show no signs of active multiplication.

The further fate of the epithelial masses which fill the air-cells depends mainly on their dryness or moisture. If they are dry, they caseate; if moist, they become fatty, liquify, and are expectorated. The author notices the interesting fact that persons who suffer from chronic cardiac diseases rarely have chronic caseous pneumonia. This exemption he attributes to the constant condition of œdema in which their lungs are kept, owing to the venous obstruction.

In the second stage of catarrhal pneumonia the catarrhal products caseate. Caseation is apt to occur whenever the blood-supply is gradually cut off from a part, so that the fluids are drained off by the absorbents, while fresh fluid is not supplied in equal quantity by the blood. Owing to this the dryness essential for this form of necrosis is brought about. This is further favoured by the gradual accumulation of the catarrhal products, and by the efforts of cough, whereby the fluids are supposed to be squeezed out of the contents of the air vesicles into the surrounding lymphatics. While the first stage of catarrhal pneumonia occurs equally in all parts of the lung, caseation is most frequent at the apex. This is due partly to the greater dryness of the apex, from which the fluids drain away in obedience to gravity (!) and partly to the lesser motion of the upper parts of the lung, so that catarrhal products more readily lodge here than towards the base, where the movements are freer. The original caseous nodule may increase by catarrhal inflammation, followed by caseation at its margin; it may become encapsuled by fibrous tissue formed around it;

croupous exudation may occur in the surrounding vesicles, and pleurisy with adhesion is very common. The two last lesions are explained as brought about in a purely mechanical way by increased blood-pressure in certain vessels in consequence of obliteration of others. Calcification of the caseated parts may take place, but the most frequent result is softening, which constitutes the third stage, or that of phthisis. This stage is complicated by the formation of tubercles in the lung, pleura, and often in other parts. These tubercles have a very definite anatomical structure, which can always be determined by the microscope, and which serves to distinguish them from small nodules of catarrhal pneumonia, from which they are often indistinguishable by the naked eye. By a process somewhat similar to digestion, in which the insoluble proteids become soluble, the caseous masses soften, and give rise to cavities. These, when of large size, are commonly traversed by fibrous bands, which are usually considered to be obliterated vessels, but which the author rightly states to be in most instances merely the thickened interlobular fibrous septa of the lung, which have resisted softening better than the infiltrated vesicular structure of this organ. The arteries of the lung are commonly found in a more or less impervious state, from obliterative endarteritis, and to this is largely due the caseation and softening of the pneumonic patches. Small aneurysms are not infrequent in the walls of the vomicæ. Cavities, if small, may heal by contraction, but the adhesion of the lung to the thoracic walls makes the cicatrisation of a large vomica impossible.

We can only briefly consider the views which are put forward in this volume on the subject of tubercle. In these there is much with which we cannot at all agree. A tubercle is a growth which is "invariably preceded by some source of infection, *usually* a caseous deposit." In anatomical structure a tubercle is, of all neoplasms, the best defined. It consists of one or more "giant-cell systems." A giant cell consists originally of a large mass of protoplasm, in which a number of nuclei soon appear, and are situated at the periphery of the cell. This latter throws out processes, and becomes branched, and the branches form a reticulum. This reticulum and the outer portion of the cell are distinctly fibrous, and are developed as formed material from the embryonal central protoplasm, which is finally used up in the process. The peripheral nuclei become flattened, and come to lie as endothelioid connective-tissue cells on the outside of the fibrous reticulum, or

"are thrown off into the meshes of fibrous tissue, thus accounting for the lymphoid and epithelioid cells, which have been so often described as elements of the tubercular neoplasm." At the periphery the meshes of the reticulum become compressed, and form a capsule for the tubercle, which would thus seem to be altogether developed from a single giant cell, although in its earliest formation the tubercle is described as consisting of a projection consisting of several cells developed from the structures forming the wall of an alveolus. As regards the giant cell, the author looks on it as the embryonic type of all connective-tissue cells, from which all arise, and to which all have a tendency to revert. This is a statement which we consider to be absolutely devoid of foundation, and we cannot help thinking that the author's views on this favourite subject for pathological theorising only add one more to the groundless speculations which have been advanced on the origin and nature of giant cells. The following are the conclusions arrived at in regard to the significance of tubercle:—

"1. That it is merely a form of connective-tissue growth.

"2. That it is caused by an irritant acting upon the connective-tissue, probably of the nature of a ferment, produced in the softening of a caseous mass.

"3. That this is carried embolically into different parts of an organ, and stimulates them locally.

"4. That the tubercle at first has a close resemblance to a sarcoma, but that when the irritation has subsided, the connective-tissue elements organise, and give rise to fibrous tissue.

"5. That the ultimate destiny of the tubercle-nodule is to produce a small fibrous tumour.

"6. That the presence of the giant-cells is merely an evidence of the return of the irritated connective-tissue elements to their embryonic type."

Tubercles commonly caseate, the caseous matter is carried away, and may form the irritant which gives rise to further growth of tubercle. A cavity is never formed from softened tubercles. The tubercles shrink, undergo fibrous change, and help to produce the cirrhotic condition of the lungs so common in chronic tuberculosis.

Tubercle of the lung is divided into primary and secondary. Both arise from infection by caseous matter, but in the former the source of infection is outside the lung, while in the latter it is contained in the lung itself, and is due usually either to catarrhal pneumonia or to interstitial pneumonia with bronchiectasis. The

primary affection is most common in children and young persons, owing to the frequency with which caseous processes are developed in lymphatic glands in early life, and is very commonly part of a general tuberculosis. Secondary tubercle is more common after twenty-one years of age, and is often limited to the lungs and bronchial glands. In anatomical features primary and secondary tubercles are alike, "yet their lines of distribution are quite different. For, whereas in the primary form they are scattered universally throughout the organ, in secondary tubercle they follow the course of the pulmonary lymphatic vessels contained in the peri-arterial and peri-bronchial sheaths, the interlobular septa, and the deep layer of the pleura." The distribution of the virus in primary tubercle is effected chiefly by the blood-vessels—in secondary tubercle by the lymphatics.

The concluding section deals with the supposed contagiosity of tuberculosis and pulmonary phthisis. In this the author deals with the parasitic nature of tuberculosis. He admits the existence of the bacillus of Koch and its close relation to tubercle, but implies that in rabbits and guinea-pigs tubercle can be induced by inoculation of substances which do not contain the parasite. As regards tuberculosis in man, we fail to grasp what is his belief. He says that catarrhal pneumonia is induced by various causes, among which the bacillus is not included. That catarrhal products caseate frequently. That when this occurs "there *sometimes* grows on the caseous part a bacterium which, if absorbed into the blood-vessels or lymphatics, is capable of irritating the tissues in which it becomes implanted, and of forming a little fibrous hyperplasia. This body, and no other, is a tubercle." That caseous masses other than those in the lungs are capable of forming a soil for the bacillus, which is closely allied to the organisms of putrefaction—proof of which statement is, however, wanting. That certain caseous masses do not give rise to a tubercular eruption, because they are protected from extraneous contamination. From all this it would appear that the author accepts the parasitic theory as stated by Koch, with the addition that for the growth of the bacillus a caseous soil is essential; but he further says, "the tubercle-poison, like the pyæmic, differs from that of syphilis and glanders in being generated *de novo* in a necrotic caseous tissue. That of syphilis and of glanders is propagated by contagion." Does Prof. Hamilton mean by this that the bacterium arises spontaneously? Or does he deny what he a few lines before seemed

to admit, that the bacterium is the tubercle-poison? Or does he wish us to believe that the tubercle, whose specific characters he has so strongly put forward, can be induced by various poisons, some of a parasitic nature, others consisting of dead matter?

As to the attack made on Koch because he extends the term tubercle to caseous and catarrhal products, it is a mere dispute about words. No one denies the anatomical difference between the tubercle, as understood by Hamilton, and the desquamated and cheesy cells of a catarrh. All that is implied is that both contain the same virus, and that consequently both will, when inoculated, produce the same series of morbid changes. Whatever they are called, their identity in this respect cannot, we believe, be questioned.

The author argues strongly, and we believe rightly, against the hereditary transmission of the tubercular poison. What is transmitted is a feeble circulation and a tendency to slight attacks of catarrhal pneumonia. These may give rise to caseous masses, which are followed by tubercle only where there grows on them a special bacterium. What the source of this bacterium is, however, the author does not state; for although he admits the possibility of infection by means of the sputum, saliva, milk, &c., of tuberculous persons, he thinks such infection rarely occurs in the human subject.

We have shown our appreciation of this work by the space which we have given to our notice of it. So long as the author confines himself to an objective description of pathological conditions, his work is worthy of all praise. His descriptions are accurate, graphic, and bear evidence of minute and careful study; and they are well illustrated by the numerous excellent drawings with which his pages are adorned. But when he comes to speculate on the mode by which the morbid changes are brought about, and on the relations which different morbid conditions have to one another, it seems to us that he signally fails. He shows himself to be rather a pathological anatomist than a pathologist; and in such passages as those which we have quoted, and many others, as, for instance, that in which he says that the longer the blood is delayed in the lungs the more oxygenated it will become, he shows a lamentable want of appreciation of the facts of physiology and of experimental pathology. Still it cannot be denied that the book is one of striking merit, and, even in those parts which we believe to be most erroneous, full of suggestive matter.

A Guide to Therapeutics. By ROBERT FARQUHARSON, M.P., M.D. Edin., F.R.C.P. Lond.; late Lecturer on Materia Medica at St. Mary's Hospital Medical School, &c. Third Edition. London: Smith, Elder, & Co. 1883. Pp. 373.

THIS third edition of a useful book does not profess to differ much from the second, and does not, therefore, demand more than a few words of notice. Although we do not like the arrangement adopted—indeed it is not easy to detect any principle of arrangement, and there is no table of contents to help us—we recommend the work to students addicted to Guides, and Compendia, and Outlines, as more useful or less injurious than most of the short-cuts to professional knowledge.

Des Effets comparés de Divers Traitements de la Fièvre Typhoïde; et de ceux produits en particulier par l'Ergot de Seigle de bonne qualité. Par le Docteur DUBOUÉ (de Pau), Membre Correspondant de l'Académie de Médecine de Paris. Paris: G. Masson. 1883. Pp. 58.

IN these days of hyperdiagnosis and hypotherapeusis it is positively refreshing to find a physician endowed with so firm a faith in the efficacy of treatment as the author of this *brochure.* If there is one class of diseases more than another to which what is euphemistically called "expectant" treatment — the treatment which quietly "waits for" the patient's death—is supposed by a large school of practitioners to be applicable, it is the zymotics; and of these enteric fever is, perhaps, the disease of all others the one to be allowed to "run its course" undisturbed by officious interference. Dr. Duboué, however, thinks differently, and gives good reason, too, for the faith that is in him. With ergot of rye, he maintains, he has not only cured the most serious cases of enteric fever, but even cut short the disease at the outset of its course. In September of last year a short paper of his on the subject, communicated to the Paris Academy of Medicine, was published in the Journal of that body; and the subject of our present notice is a sequel to the former. In the original paper he had brought forward detailed cases, in which he claimed to have obtained from the systematic administration of ergot of rye such results in the treatment of enteric fever as no other plan of medication had vielded. The academicians—at least the majority of those who

took part in the discussion—having shown themselves unconvinced, the author appeals to the Profession and circulates this pamphlet, of which we propose to give a brief summary. Enteric fever is a matter of everyday concern to most of us, and any line of treatment which professes to diminish its fatality deserves consideration and demands trial.

The cases reported to the Academy were selected for their gravity—cases in which the ergot treatment had been applied "almost *in extremis*—such, also, as had been seen by other physicians, and in which the diagnosis could be doubted by none" (they will be found in the *Bulletin de l'Académie* for the meeting of the 12th September), and "the most rapid improvement and a truly surprising cure followed closely upon the systematic application of the treatment." As an illustration he gives the following case, not his own, but reported by M. Guichard, a country practitioner:—

"On the 3rd of last March, in the height of the epidemic, my own child, aged nearly four years, was attacked with typhoid fever, attended by the most serious adynamic symptoms. Delirium was continual; the fever of extreme intensity. There was alternation of diarrhœa and constipation. After having had recourse, in consultation with our friends Drs. Vacquier and Sallées, to every remedy used in such cases, and especially to quinine, *the symptoms took on a character of such exceptional gravity* that all hope seemed to us lost. My two *confrères* had left me; I was alone, and in despair. I determined, in spite of the youth of my dear patient, to exhibit the ergot, which I administered in doses of ten centigrams, in a glass of claret diluted with sugared water. Under the influence of this medication, after *two hours* only of its application, a perceptible improvement was manifested; the child opened its eyes for the first time for eight days, and murmured, 'Mamma.' The fever had greatly diminished in intensity; and when my two *confrères* returned the next day they were amazed at the result which had been obtained."

The child recovered perfectly.

Although Dr. Duboué considers statistics as unnecessary to his cause, as they would be for the purpose of proving that mercury and iodide of potassium cure syphilis, or quinine paludal fevers, yet he does give us a few figures which are certainly remarkable. He had 3 deaths in 51 cases treated with ergot, or 5·88 per cent. Of 16 cases, "*de la plus haute gravité*," treated with ergot, either by himself or others, only 3 were fatal, giving a death-rate lower

than 19 per cent.; but of 5 cases of extreme severity, treated subsequently to the preparation of these statistics, 2 were fatal, raising the mortality to 24 per cent. The death-rate from all cases of enteric fever in the French army is stated to be between 20 and 21 per cent.; and 19 is given by Jaccoud as the average rate generally. Our author's cases, it must be remembered, were all of the worst type; and in his paper communicated to the Academy he reported 5 cases, all "*arrivés à la période ultime de la maladie,*" and some even *in extremis*, which recovered under his treatment.

As to the *rationale* of his method, he argues that most of the symptoms of enteric fever are traceable to weakness of the heart and muscular coat of the arteries, and, therefore, that the indication for treatment is "to restore to the muscular contractility the energy which is deficient from the outset of the disease, and which diminishes more and more in its course" (p. 27). He points out that the other remedies which have been found useful in practice possess the power of stimulating muscular tissue—quinine producing, in sufficient doses, quivering of the fibrillæ; cold water contracting the cutaneous muscles; and carbolic acid being capable, in poisonous doses, of inducing violent tonic spasms. So, too, ergot of rye taken into the system in bread causes convulsions. He then proceeds to compare the efficacy of quinine with that of ergot, and gives cases in which the latter had worked wonders in most serious cases after the former had been tried long and fairly, and had failed. He recognises fully the unquestionable benefits obtainable from treatment by cold baths; but says, with much truth, that the use of them in practice "bristles with the greatest difficulties," requires incessant supervision, and exposes the patient to serious risk of chills.

The greatest care is necessary in the choice of the ergot used. The masses—their size is indifferent—should show no holes on their surface, no yellowish dust, or efflorescence, or mould. The fracture should be clean and smooth, and show that the interior is not excavated. The average dose is 1 to 2 scruples a day for an adult; for a child of six to twelve years of age, 6 to 15 grains; but of course the effects of the drug must be watched and the doses diminished if tingling of the extremities or considerable reduction of temperature occurs. It is best administered in powder, suspended in water, syrup, wine, milk, or soup. The first doses sometimes cause nausea and vomiting; and if these persist after

the second day of exhibition, in an undoubted case of enteric fever, we may infer with certainty that the ergot is of bad quality. Pregnancy does not contra-indicate the treatment though it enjoins caution. The good effects are generally apparent at once; but, in some very severe cases, a week may elapse before improvement is manifested—"the *real* amelioration consisting in the fact that the patient is not dead." Finally the drug, in smaller doses (4 grs. twice a day for an adult), should be continued to an advanced period of convalescence.

Dr. Duboué makes out a good case, and his treatment is well worthy of a trial.

Remarks on Hydrophobia. By CHARLES W. DULLES, M.D. Reprinted from the *Philadelphia Medical Times* for August, 11, 1883.

DR. CHARLES W. DULLES, of Pennsylvania, was called one morning to attend a boy who, about a month after having been bitten by a dog, had fallen into a state presenting an almost typical picture of what is known as hydrophobia. Notwithstanding all that could be done, the young patient passed through an extremely interesting series of phenomena of sensori-motor and ideo-motor excitation, and died within twelve hours after Dr. Dulles first saw him. This case led Dr. Dulles to devote a large part of his leisure, for fifteen months, to the work of studying what others had thought and written about hydrophobia. The result is embodied in an essay, "Remarks on Hydrophobia," read before the Philadelphia County Medical Society, 23rd May, 1883. Dr. Dulles comes to the conclusion that the subject (hydrophobia), as presented to us in both ancient and modern writings, is in the highest degree unsatisfactory, and that we should be no losers if the whole of the enormous mass of literature relating to it were swept away. He seems inclined to the belief that hydrophobia in man is a disease of the mind and not the result of the poison of a rabid animal introduced into the system. In the discussion which followed the reading of the paper this view was not generally accepted, although several present declared themselves sceptics. It is hard to believe, as one of the speakers urged, that the thousands of physicians who have treated and described the disease before our time were all fools, or that the hundreds of people who have died from hydrophobia were all victims of their imagination.

Is it too much for us to ask that some one of the ardent admirers of the "*fright and imagination theory*" should deliberately allow a mad dog to bite him, and then depend upon his superior wisdom and lack of imagination to avert the possible and probable development of hydrophobia?

Sir Thomas Watson alludes to the disbelievers in the existence of the disease in man:—"You will be surprised when I tell you that some persons have made it a question whether there is, or ever was, any such disease at all. The late Sir Isaac Pennington, who was Regius Professor of Physic at Cambridge, had never seen a case of hydrophobia; and nothing could persuade him that any one else had seen anything more than a nervous complaint produced by the alarmed imagination of the patient, who, having been bitten by a dog reputed to be mad, and having the fear of feather-beds before his eyes, was frightened into a belief that he had hydrophobia, and ultimately scared out of his existence. Now," continues Sir Thomas, "if you meet with such incredulous persons, and think it worth your while to argue the point with them, you may object to their unbelief, the improbability that so many persons who have been bitten by mad dogs should have suffered so precisely the same train of symptoms, and at last have died from the mere force of a morbid imagination; you may urge them with the fact that many of these persons have been under no apprehension at all until the disease has seized upon them; that many, also, have been men of naturally strong and firm minds [*ex. gr.*, the Duke of Richmond], not at all likely to be frightened into believing that they were seriously ill unless they really were so, and still less likely to be terrified into their graves; and if this have no weight with such reasoners, you may bring forward the conclusive facts that the disease has befallen infants and idiots, who had never heard or understood a word about mad dogs or hydrophobia, and in whom the imagination could have had no power in calling forth the complaint; and, if they are proof against this, you must give them up. I can suggest nothing more."

Lectures on Diseases of the Nervous System, delivered at Guy's Hospital. By SAMUEL WILKS, M.D., F.R.S. Second Edition. London: J. & A. Churchill. 1883. Pp. 602.

NO form of medical teaching is so effective as the clinical lecture, and no professional works can be read with more interest and

profit combined than collections of successful lectures delivered in hospitals and illustrated by the cases which suggested them. At a time when scepticism as to the effect of drugs, and even of treatment, on disease prevails so widely, as well within the ranks of the Profession as without, there are few practitioners, and no students, who would not be the better of reading again and again, for the confirmation of their faith, such books as the Clinical Lectures of Graves and of Trousseau. Dr. Wilks' work is not unworthy to be classed with these; and we receive with pleasure a second edition of his Lectures, first published in a separate form in 1878. Though originally delivered more than fifteen years ago—and great additions to our knowledge of nervous diseases have been made by the observations and researches of German, French, and English physicians since that time—there is nothing antiquated about their teaching. The latest discoveries and speculations have been incorporated in the present edition. The nature of a work of this kind precludes a detailed review. We shall content ourselves with indicating the Lectures on Aphasia, Apoplexy (with special reference to the remarks on blood-letting), and Hysteria, as particularly interesting and instructive.

ÆTIOLOGY OF CATARACT IN MIDDLE AGE.

CATARACT in aged individuals, without any tangible or apparent cause, is generally ascribed to senile changes of tissue, which is not with all persons alike. In very advanced life, perfectly clear lenses, free from dots or striæ, are hardly ever found. But it is in cataract formation of the young and middle-aged that we must always endeavour to find some constitutional causes for it, for traumatism and ophthalmia of the deeper tissue are not considered here. Diabetes furnishes a large contingent; atheroma of the carotids (Michel), nephritis (Deutschman) and ergotism (I. Meyer) are mentioned. A relative frequency of cataracts in young individuals with psychical alteration are pointed out (Romiél). The attention of observers is invited to epileptic and hysterical patients. Among twenty-seven cataracts, in the ages between sixteen and forty-eight, there were four epileptic males, and two females who were subject to hysterical spasms, consequently twenty-two per cent. With all these, both eyes were affected alike. There were forty extractions made, with thirty-seven good results.—*Klinische Monatsbl. f. Augenheilk*; and *St. Louis Medical and Surgical Journal.*

PART III.

HALF-YEARLY REPORTS.

REPORT ON SURGERY.

By William Thomson, M.A., F.R.C.S.; Surgeon to the Richmond Hospital, Dublin; Examiner, Royal College of Surgeons.

EXCISION OF THE KNEE.

Two papers which will prove of much interest to operating surgeons have recently appeared upon the subject of resection of the knee-joint. The first is by Ollier of Lyons (*Revue de Chirurgie*, Nos. 4 and 5, 1883, and *Lond. Med. Record*, October 15, 1883), and the second by P. Vogt of Griefswald (*Centralbl. für Chirurgie*, No. 24, 1883, and *Lond. Med. Record*, August 15, 1883). The former author gives a general review of the operation and its results, and points out the cases in which it appears to him to be a successful procedure. One is surprised to find that his first cases were attended by a mortality of from 75 to 80 per cent., a result which for a time caused him to abandon the operation altogether. Antiseptic dressings have, however, reduced this frightful death-rate to 14. Even this, however, is far beyond what is met with by Irish surgeons. In his own cases and in a large number operated upon by his colleagues the reporter cannot recall a fatal result. The operation has failed in some few instances to secure a useful limb, and amputation has been performed, but the mortality has been nil.

M. Ollier states:—

"That formerly he was opposed to this operation, and, on account of the high mortality—75 to 80 per cent.—which followed his first attempts, he thought it preferable in cases not amenable to treatment by rest, drainage, and incision of abscesses, to have recourse to amputation in the thigh, the mortality of which operation in such cases was about 40 per cent. At the present day, however, owing to antiseptic dressings, the proportion is completely changed. Of seven cases in which resection of the knee has been recently performed by Ollier, one only was fatal; and in this death occurred very soon after the operation. and was due to shock. The mortality of resection of the knee has thus

been reduced from 80 to 14 per cent., and the motives which formerly induced the surgeon to abstain from performing this operation no longer exist. The use of Lister's dressings, with which M. Ollier associates iodoform, have completely changed the conditions of operative surgery in the clinique at Lyons. As an example of this, M. Ollier states that, during the six months just previous to the date of his paper, he had performed twenty-two major operations (resections of large joints, amputation in the thigh and leg) without having had a single bad result through infection. Resection of the knee, which now, in M. Ollier's opinion, claims a place in the first rank of conservative operations, is applicable to three principal conditions—osteo-arthritis, or suppurative fungous arthritis, comminuted fracture, or gun-shot wounds involving the joint; ankylosis in a bad position. Thus the resection may be pathological, traumatic, or orthopædic.

"M. Ollier does not approve of performing resection of the knee on children in whom osteo-arthritis usually yields to the expectant treatment, and the limb after the resection is likely to become very much reduced in length. He would not, therefore, practise the operation on any subject under the age of eight years and a half. In older patients, the indication for resection of the knee exists not only when the removal of the osseous extremities is absolutely necessary for the preservation of life, but is presented also when it is desirable to remove the source of a suppuration which though not threatening to become immediately fatal, may prove so at any time, and which condemns the patient to long confinement in bed, and causes all the bad results of a chronic discharge. Formerly, it would have been more prudent under these conditions to undertake a natural cure; but now, M. Ollier holds, it would be blameable not to resect. The operation, when performed at a proper time, will prevent the dangers of articular suppuration, and enable the patient in the course of three or four months to leave his bed and to move about.

"In performing resection of the knee, it has been M. Ollier's aim to place the parts in the best conditions for favouring osseous ankylosis, or obtaining an useful new joint in cases where solid union has not been established. Division of the ligaments and ablation of the capsule, as practised in the operations of Park and Moreau, is attended with the disadvantage of destroying the close relations of the osseous surfaces, and leaves the extremities of the bones quite loose in the wound, and deprived of such supporting soft structure as might assist very much in their ulterior union. By preserving the periosteo-capsular sheath, and maintaining the lateral and posterior continuity of this sheath, the surgeon may retain the ligamento-muscular girdle which surrounds the bones, and would keep them together after the operation. M. Ollier advocates the subperiosteal method of resecting the knee, but points out that this is not

done with the view of forming a new joint. A solid limb is needed to support the weight of the body, and osseous union is the best guarantee against any relapse of the local disease. An H-shaped incision is made, which, however, is smaller than that which was formed by Moreau; on each side of the joint, is made an incision for free discharge and for the insertion of drainage-tubes. The outer incision is made just in front of the tendon of the biceps, and the inner one just behind the tendon of the sartorius. In making the tranverse incision, the ligamentum patellæ is cut through and the joint opened; the lateral ligaments of the knee are not divided. The superior flap is then raised together with the patella. If this bone be found diseased it is removed, its anterior covering of periosteum, together with the continuation of the tendon of the extensor muscles, being carefully preserved. The crucial ligaments having next been divided, the inferior extremity of the femur is projected through the wound and stripped of its periosteum, and the insertions of the ligaments, as far as the line to which it is thought necessary to apply the saw. The extremity of this bone having been removed in the usual way, the end of the tibia is dealt with in a like manner. All masses of thickened synovial membrane are scraped away, and the sawn surfaces of the bone brought together and fixed by two wire sutures. After the application of sutures to the edges of the skin flaps, the ends of the divided ligamentum being also brought together by suture, antiseptic dressings are applied, and the whole limb secured in a splint. This proceeding, Ollier asserts, not only seems to realise all the conditions required for total resection, but is applicable in its primary stage to exploratory arthrotomy, to articular scraping, and to superficial (intra-epiphysal), and partial resections of the knee-joint. Under these circumstances, it is important to preserve the lateral ligaments and to re-establish the continuity of the quadriceps by suturing the ligamentum patellæ. The tendino-ligamentous girdle having been left intact, the elements of resistance and motility are preserved, and the joint is subjected but to the minimum of disturbance. M. Ollier, however, would not at the present day compare these partial operations with total resection of the knee. The former are, in certain cases, rational operations, the dangers of which are much diminished by Lister's dressings and iodoform, but they are attended by the disadvantages of all operations that are too conservative—they expose the patient to the risk of relapse. The patella has always been removed by M. Ollier; and it is considered prudent not to leave this bone in resection of the knee in the adult, when it is deprived of its cartilage and more or less diseased internally. This practice is a guarantee against relapse of osteitis and of fungous disease of synovial membrane. M. Ollier would not, however, adhere strictly to this rule, and thinks that the patella might well be left in cases of traumatic arthritis, particularly in infants. When this is done, it is necessary

to increase the number of drainage-tubes. In preserving the patella when sound, in cases of some other lesion of the joint than osseous or synovial tuberculosis, the surgeon might gain the same advantages which he seeks to obtain by preserving the lateral ligaments and the capsule—that is to say, around the line of reunion of the bones there is an addition to the tissues, serving to augment the solidity of the limb. If firm union fail to be established between the bones, the presence of the patella would probably favour the compatibility of articular motility with usefulness of the limb.

"In dealing with enlarged granular masses of synovial membrane in resection of the knee, the surgeon's practice should vary according to the nature of the arthritis. In articular disease of traumatic or rheumatic origin, these granular masses are converted into stable cicatricial tissue after the removal of their superficial layer, but in tubercular arthritis it is necessary to remove all the diseased synovial membrane and to apply the actual cautery to the raw surface. In cases where well-marked grey granulations exist, and where large masses are observed of caseous material, or of pale and slightly vascular granulations extending under the periosteum, amputation is preferable to resection. Since the introduction of antiseptic dressings, the prospects of treating severe open injuries of the knee by resection have much improved; and, at the same time, these dressings, by preventing those bad results which resection is intended to remedy, are likely to diminish considerably the number of cases of resection, and to widen the field of non-operative conservative surgery. There will, however, always remain a certain number of cases of comminuted fracture of the epiphyses which should be treated by resection—as, for example, when the condyles are broken up into numerous fragments and a projectile or some other foreign body is present in the midst of the splinters. In a case of this kind, M. Ollier would perform the following operation, which he has not yet tried on the living subject, but which seems to possess several advantages on account of its simplicity and of its favourable anatomical conditions with regard to ulterior renewal of the joint if ankylosis should fail. This consists in a single straight median incision carried longitudinally over the patella and through the tendon of the quadriceps and the ligamentum patellæ, dividing these latter structures into two equal parts. The patella having been divided by a saw into lateral halves, the two lips of the wound are separated, the interior of the joint is exposed, and the extent and situation of the injury fully revealed. The surgeon is then able to do what is necessary, whether simply to remove splinters or foreign bodies, or to perform resection.

"In two of the seven cases of resection of the knee recorded in this memoir, the operation was performed for osseous ankylosis. This condition has been the result in one of these instances of extension of inflammation from the juxta-epiphysal region; in the second, of acute

traumatic arthritis. In dealing with ankylosis of the knee by operation, the surgeon has hitherto had the choice of two methods of procedure; cuneiform excision of the femur above the articulation; resection of the osseous extremities which formerly constituted the joint. The second, M. Ollier states, is that most frequently indicated, and is the only operation applicable in cases where the extremities of the bones are still diseased; where there are patches of osteo-myelitis in the condyles of the femur; and where open sinuses still exist and lead down between the bones. The operation of cuneiform excision of the femur may doubtless be often applied, but in cases where it is not necessary to interfere with the old joint, and where there is no diseased tissue to be removed, this cuneiform resection, in Ollier's opinion, should be replaced by a simple supracondyloid osteotomy, or better still by a bloodless operation—that is to say, by femoral osteoclasis. This supracondyloid fracture is with Ollier the 'method of election,' whenever such operation is applicable and especially in ankylosis of traumatic or rheumatic origin. In such cases, he would not hesitate to have recourse to osteoclasis, if the amount of flexion at the freed knee did not pass beyond a right angle. Osteotomy, it is allowed, has no great danger if performed antiseptically, but still it is not so harmless a proceeding as osteoclasis. That method should be chosen which enables the surgeon to obtain the same orthopædic result without a wound and yet with equal precision.

"This memoir concludes with the following summary:—1. Antiseptic dressings have completely changed the indications and prognosis of resection of the knee. As formerly it was accounted wise and prudent to reject this operation, or at least to limit its indications in hospital practice, so now it would be considered unreasonable to continue to amputate the thigh in cases where resection is applicable. 2. In young subjects, on account of the dangers of resection with regard to ulterior lengthening of the bone, it is still necessary to insist on a methodical expectant treatment in suppuration of the knee, and on the employment of such relatively simple means as arthrotomy, articular scraping, drainage, &c. The surgeon might have recourse in the first place to these means at any age, but he should always prefer resection to amputation, except in dealing with severe forms of tubercular arthritis, for which the latter is the proper operation. 3. The gravity of resection of the knee is not greater at the present day than that of amputation through the thigh. The cases recorded in this memoir show that in resection of the knee success is now the rule where formerly it was the exception, and that the surgeon must be guided by other motives than the gravity of the operation in deciding between amputation and resection. 4. Endeavour should always be made to obtain osseous ankylosis after resection of the knee; but it is necessary in this operation to ensure a strong articulation, in case, for some reason or other, ankylosis might fail. 5. The

subperiosteal method allows the surgeon to attain this result. The sawn surfaces of the bones are thus left surrounded by abundant ossifiable tissue; and in cases where osseous union does not result, a complete ligamento-muscular girdle is preserved around the new joint. 6. From the scarcity of the observations that have hitherto been recorded, it is yet impossible to estimate the value of resection of the knee in military surgery. It may be presumed, however, that in future campaigns results may be obtained as good as those of modern civil surgery, if only the wounded can be treated with ordinary care. 7. In resection a transverse incision is recommended, together with two lateral vertical incisions. These incisions should not be so extensive as those that were made in Parke's operation, and the lateral ligaments of the knee should be left intact. On each side of the joint, far back and near the posterior margins of the condyles, a deep vertical incision is made for the purpose of drainage. 8. In cases of chronic intra-articular suppuration, it is usually found necessary to remove the patella, its anterior covering of periosteum being preserved. The continuity of the ligamentum patellæ should be re-established by nature. 9. In the operative treatment of comminuted fracture of the articular extremities of the bones, a longitudinal incision is to be preferred to transverse incisions. A median longitudinal incision in front of the knee, dividing the patella into two lateral halves, facilitates the operation, and preserves all the constituent elements of a new joint, and at the same time favours ankylosis, if this result be intended. 10. In osseous ankylosis of the knee, supracondyloid osteoclasis should be the method of election. This operation is especially applicable in cases of ankylosis of traumatic or rheumatic origin, when flexion does not reach or exceed a right angle, and when there are not any deep-seated and multiple cicatricial bands in the popliteal spaces. 11. Whenever there is a risk of lacerating any of the popliteal vessels or nerves enclosed in cicatricial tissue, it would be better to have recourse to supracondyloid osteotomy or to resection. It would be necessary in such case always to practise total resection of the condyloid expansions of the femur, if the cicatricial adhesions be deep-seated and multiple, and if the leg be flexed beyond a right angle. 12. Resection of the condyloid expansions is the only operation to be proposed when signs of inflammation of bone are presented. In a case of flexion of the leg passing beyond a right angle, the surgeon must remove not merely a wedge-shaped bone, but must take away some thickness of the posterior portion of the femur. This is the sole means of bringing the surfaces of section into contact, without exciting painful tension in the popliteal region, and interfering with the circulation of the limb.

"Dr. P. Vogt, of Griefswald, states that, with our very imperfect knowledge of the primary conditions of fatal absorption of fat after injuries of bone, it might be of interest to direct attention to one point

which, in his opinion, is likely to favour extensive fat-embolism after resection of the knee, and the neglect of which is more frequently followed than is generally thought by a fatal result from the operation. The following case is reported, of speedy death after resection of the knee performed under apparently favourable conditions:—The patient was a girl, aged twelve years, on whom resection of the knee was performed for fungous disease, with extreme and long-standing contraction of the flexor muscles. On opening the joint, the extremities of the femur and tibia were found to be so far free from tubercular deposit that it was possible to save the epiphysal cartilages. The whole of the osseous elements of the joint were in a condition of extreme fatty degeneration, so that the removal of the articular surfaces could be readily effected by the use of a knife. This condition seemed a likely result of the prolonged inactivity of the limb, and did not decidedly contraindicate subsequent union of the sawn surfaces. The lower limb could now be readily straightened, and in this position of full extension the opposed osseous surfaces came into direct contact. Although the patient had taken but little chloroform, and there had not been excessive bleeding, and carbolic acid had not been used for disinfection, she, after the influence of the anæsthetic had passed off, remained extremely prostrate. The countenance was pallid, the respiration shallow, sensibility much reduced, the pulse scarcely perceptible, the heart's action very slow, and the extremities cold. Notwithstanding the use of stimulating remedial agents, there was no improvement in the condition of the patient, who became more and more drowsy, and died after an interval of twenty-four hours. On *post mortem* examination, appearances of very extensive fat-embolism of the lungs were presented.

"After careful consideration of the symptoms presented in this case, and of the *post mortem* appearances, Vogt felt obliged to exclude all other conditions as causes of the collapse, and to attribute the fatal result to fat-embolism, indicated by diffused infarction in the lung, containing large and small globules of oil. As has been shown by the experiments and clinical observations of Czerny, Recklinghausen, and others, only very extensive fat-embolism of the lungs can cause death, whilst the slight fatty infarctions of the pulmonary vessels, frequently occurring after injury to bone, do not result in serious lesions. The necessary conditions for the production of fat-embolism are—sufficiently large normal or pathological orifices in the walls of the vessels; the presence of free oil near the vessels; and, lastly, a *vis à tergo*, usually the pressure of extravasated blood. All these conditions are frequently present in cases of fracture; but fat-embolism rarely occurs after amputation and resection, since, on account of the free discharge of the secretions of the wound, there is not sufficient pressure to favour absorption. The only other case of fat-embolism after resection known to the author is one

that occurred in Professor Lücke's practice after resection of the hip. In Vogt's case, as is pointed out, the conditions for the absorption of fat by the surfaces of exposed bone were extremely favourable. When the limb was straightened after the ends of the bones had been removed, the sawn surfaces came into very close contact, and were pressed together. The bones were kept in this close contact by two wire sutures, so that there was no possibility of the secretion from the sawn osseous surfaces and of the abundant oil flowing away into the soft parts of the thigh and leg. Vogt holds that the rapid absorption of oil from the sawn surfaces of the degenerated bones is thus fully explained. Under no circumstances, it is stated, should osseous surfaces found in a similar condition in future cases of resection of the knee be placed in close contact. The enfeebled cardiac action in the anæmic subject of Dr. Vogt is pointed out as having been a favourable condition for the arrest and accumulation of oil in the lungs. Dr. Vogt has been led by a consideration of this case to suggest that, in dealing with similar cases of disease of the knee, with extreme flexion of the leg, and fatty degeneration of the marrow of the femur and tibia, it would be well, if the limb in resection cannot be straightened without close contact of the sawn surfaces of bone, or without removal of the epiphysal cartilage, to have recourse to amputation.

"Allusion is made to an interesting point in this case, that, in the interval between the operation and the death of the patient, the temperature remained low, and showed no tendency to rise. This fact indicates that lowered temperature is pathognomonic of uncomplicated fat-embolism, and that the increase of temperature associated with pneumonic symptoms recorded by some observers in cases of such embolism was due to some complicating infective condition."

RESECTION OF HALF OF A VERTEBRAL BODY.

Israel of Berlin (*Berliner klinische Wochenschrift*, No. 146, 1882) reports a case in which a patient with curvature of the spine suffered from abscess and paraplegia. Supposing that the last-named was due to compression of the spinal cord by a purulent collection, Israel resected the twelfth rib and half of the twelfth dorsal vertebra, and was thus able to evacuate the abscess. The paraplegia was not at all modified by this interference, and the patient died at the end of thirty-seven days, after having presented symptoms of purulent pleuritis.

TEARING OF THE VENA CAVA WITHOUT HÆMORRHAGE.

Lücke (*Deutsche Zeitschrift für Chirurgie*, XV., fas. 5 and 6, p. 578) reports a case in which sarcoma of the kidney having been

diagnosed, extirpation of the gland was proposed and accepted. The capsule of the tumour having been opened it was enucleated. While it was being thus detached it suddenly appeared to view and rolled into the room. At the same moment a flood of dark blood filled the abdomen. Compression was made with sponges and gauze upon the point from which the blood appeared to come. The bleeding ceased, and the abdominal wound was closed. The patient did well for a day; then followed symptoms of uræmia, small pulse, vomiting, diarrhœa, and absolute suppression of urine. Death followed on the fourth day from uræmia. The *post mortem*, which was made by V. Recklinghausen, showed primary carcinoma of the kidney, carcinomatous thrombosis of the renal veins, laceration of the principal renal vein and of the inferior vena cava, closed by a largė thrombus 15 mm. long.

THE TREATMENT OF FRACTURED PATELLA.

Mr. Lister, in an address before the Clinical Society of London (*Brit. Med. Jour.*, Nov. 3, 1883), has made a most important contribution to surgery in regard to the treatment of fracture of the patella. The distinguished surgeon was able to show six out of seven cases on which he had operated successfully; and all showed that very free use of the joint was maintained. The question, in spite of this success, however, is a very debatable one. It has been the fortune of the reporter to meet with a case in which the most disastrous results followed this operation, and it may not be out of place to repeat some of the particulars in connexion with Mr. Lister's most interesting communication. The operation has been done very frequently not only for want of union, but in cases of recent fracture. Mr. Lister says that these latter can be treated so as to restore "the joint to practically a perfectly natural condition, provided only that no disaster occurs;" and he admits the danger by observing "that, however, is a tremendous proviso, and no one is more conscious of it than myself." The question which presents itself to one's mind is this—"Is the end attained by success worth the risk ?"

Mr. Lister's address deserves careful study. It is unnecessary to give details of the cases, but the directions for operating may be quoted here:—

"I should like now to say a few words as to the method of operating. The wire employed should be, as I have said, pretty stout, about one-sixteenth of an inch in diameter. I have not found it needful to use

more than a single suture of such wire. It is applied in the vertical plane, in the course of the longitudinal incision over the middle of the bone; and in recent cases no dissection of the soft parts from the patella is necessary. It seems important that the cartilaginous surface of the bone should be left quite smooth, or, in other words, that the fragments should be exactly at the same level at their lower part. We cannot be perfectly sure, when we drill, that the bradawl will come out exactly at a corresponding point on the two surfaces. Supposing that on one side the instrument should have come out too far down, it may be into the cartilage instead of a little above it. We do not regard that at first, but pass the wire through each drill-hole the moment the drill is withdrawn, and then on that side on which the hole has come too far down, by means of the bradawl, we simply chip away a little of the material that is above the wire until the wire comes to be in a position exactly opposite to the hole on the other side, leaving a gap below. This is a perfectly simple matter; at the same time, it might possibly not occur to anyone during the operation. Here we have the wire represented twisted, and the twist hammered down. The twist always goes to one side, and, being on the other side in this instance, is not shown in the section represented by the diagram.

"I think it must be admitted that these cases show that the mode of treatment which I have recommended, when applied to recent transverse fractures of the patella, affords a means of restoring the joint to, practically, a perfectly natural condition, provided only that no disaster occurs. That, however, is a tremendous proviso, and no one is more conscious of it than myself. Before I made the incision in the first case that I have recorded to-night, I remarked to those who were assembled in the theatre that I considered no man justified in performing such an operation unless he could say, with a clear conscience, that he considered himself morally certain of avoiding the entrance of any septic mischief into the wound. Supposing, on the other hand, that a man can say that with a good conscience, then I conceive that he is not only justified, but bound to give his patient the advantages that we see are to be derived from this method of procedure."

The reporter's case was read before the British Medical Association at Worcester (*Brit. Med. Journal*, August 26, 1882), and, as it throws light on a possible result of suture of the patella, it is here summarised:—

"I was sent for to my hospital, late one evening, to see a man who had just been brought in, and who was the subject of a very remarkable accident. He was aged about thirty-six, and had filled the position of first officer in a large foreign-going ship. I found him lying in bed, suffering from an extensive rupture of the knee-joint. There was a

great gaping wound running directly across the knee, extending from condyle to condyle of the femur, with edges as sharply defined as if they had been made by a surgeon's knife. The patella was broken transversely; and, as the patient could not extend the limb, and the thigh and the leg lay at about right angles to each other, the condyles of the femur and the articular surface of the tibia were fully exposed.

"The patient had been operated upon by the late Mr. Amphlett, of Charing Cross Hospital, London, about a year previously. The fragments were sutured with wire.

"The patient stated that, after he left Greenwich, he gradually improved; but the joint had hardly any motion. It was slightly flexed, so as to cause him to walk on the anterior part of the foot, and he was unable to pursue his occupation. On the evening of the accident he was leaving a shop, and when stepping down to the pavement his toe caught in some obstacle; the limb was violently flexed as he tried to save himself from falling. He at once felt something snap, and an examination showed what terrible mischief had been done.

"After a full consideration of the case, we believed that excision offered a fair chance of success. This was accordingly at once performed, and the patient recovered with a useful limb. . . .

"The patella itself is in two fragments. The fracture has taken place nearly in the line of the old injury; but there can be no doubt that osseous union existed in the bone after the original operation. Four holes remain (two above and two below the line of fracture) to indicate the position of the wire sutures. Union had taken place for about two-thirds of the distance across. Beyond that is a separation between the portions of the patella amounting to one-third of an inch. The fracture was almost extra-articular, only encroaching on the line of cartilage to the extent of half a line. The cartilage has nearly altogether disappeared, except round the margins. . . .

"Is a fractured patella, united by ligamentous bonds, which afterwards stretch, so great a misfortune after all? I have never seen a case of osseous union in a living subject, and I have never seen a case in which a patient was disabled to any great degree by his fractured patella. Every surgeon has met with cases which get on very well without bony union, and without any special apparatus. I do not mean to say that in no instance ought this operation to be done, but I think it ought only to be recommended where the injury has become an absolute impediment to the patient's progression. In the present case, at all events, the man's position was not improved. He had a too flexible joint before the operation, and a stiff flexed one after it—a condition which might have been practically secured by a properly adjusted knee-cap. Moreover, I think we render these persons so operated upon often liable to such an accident as is here reported; for we may have, instead

of movement, a spurious insecure ankylosis, with a joint covered by cicatrised and tightened integuments, liable to rupture on very slight provocation.

"If, however, the operation in such cases should be rarely resorted to, it seems to me that it cannot be justified in recent accidents. Experience shows us every day the admirable results which may be attained by simple methods, and the facility with which persons with broken patellæ may pursue their avocations. Is it to be laid down as a rule that we are to wipe out such probabilities altogether, and to lay open a man's joint at once? If we could be assured of perfect motion with perfect union the justification would be strong, but who can assure us? Passive motion is always late and limited, because we cannot disturb the uniting fragments; and, meanwhile, changes are being effected in the synovial membrane, the cartilages, and the ligaments generally, which may end in giving us a much worse joint than if we had left it alone. I am quite conscious of the great advances in operative work which the Listerian method has allowed to be made; but, thorough believer as I am in its efficacy and its complete safety where accurately carried out, there are risks which will always surround it, as they surround every scientific method. It has enabled us to do great things, but even with its help I cannot believe that we are justified in attempting to do what is unnecessary, when that proceeding is attended not only with danger to limb but to life also."

VERATRINE AS A REMEDY FOR TREMOR.

M. Féris, of Brest (*Progrès médical*, July 14, 1883), has come to the conclusion that veratrine will control the tremor of alcoholism, of various nervous affections, and of the state following pyrexia. It is to be given in half-milligramme pills, four of which should be taken daily. The action is apparent almost immediately after the first doses are taken. If the remedy is continued for a sufficient length of time, its influence remains for a long period after the use of the drug is suspended. This persistence has been observed for almost two months. The treatment should be continued at least ten days in order to produce permanent results. M. Dubois (*Gaz. hebdom. de méd. et de chir.*, July 27, 1883), in reviewing the conclusions of M. Féris, observes that most of the active principles, administered during the state of alcoholic intoxication, from the time the tremor is of the greatest intensity (the patient having abruptly stopped the alcohol), will act like veratrine to check the tremor.—*N. Y. Med. Jour.*

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. Banks, M.D.
General Secretary—W. Thomson, M.D.

PATHOLOGICAL SECTION.

President—A. H. Corley, M.D.
Sectional Secretary—E. H. Bennett, M.D.

Opening Meeting, Friday, November 2, 1883.

The President in the Chair.

Presidential Address.

Mr. Corley, President of the Section, having acknowledged the honour conferred on him by his election as President in succession to Professor Purser, directed attention to some of the recent advances in pathological science, dwelling particularly on the phenomena of diapedesis of the blood corpuscles, and on the facts disclosed by the investigations of Pasteur and of Koch.

Microphotography.

Dr. Dickenson made a communication on the art of photographing microscopic objects, exhibiting a number of specimens produced by himself, and the apparatus used for the purpose. Having reviewed the history of microphotography, he demonstrated that the difficulties in its application were now in a great measure removed. His apparatus was of the simplest kind, consisting of three parts—the first, an inexpensive magic lantern, illuminated by a triplex petroleum lamp, with the ordinary combination of lenses, and an extra tube with a small bull's-eye condenser; the second, a microscope, placed horizontally, without the eyepiece; and the third, a frame to hold the glass screen for focussing the image, and to receive the sensitised plate when photographing. He then exhibited a series of pictures produced by the apparatus.

Dr. Hayes congratulated Dr. Dickenson on the great simplicity of the apparatus, and on the results which it produced. He had no doubt that if the electric light could be applied to it, there would be nothing to compare to it. Its use, with a light intense and strongly actinic, would be a great advantage; for the illumination could be cut down by diaphragms, and the sharpness and depth of the image increased. Dr. Dickenson had not mentioned the length of exposure he usually employed.

Dr. Dickenson.—From fifteen seconds up to two hours.

Dr. Hayes said that with the electric light he had got pictures up to 300 diameters taken in four seconds, and with the oxy-hydrogen lamp pictures could be obtained in from ten to twenty seconds.

Dr. Bennett remarked that having taken a special interest in the structure of urinary calculi, he had selected a number of specimens, with a view in part of verifying Carter's observations on the subject. He had got a number of microscopic sections of these, but heretofore he had found it utterly hopeless by the usual means to represent them. Two of the specimens he placed in the hands of Dr. Dickenson, who had produced from them, almost without difficulty, representations most accurate in detail, and far more perfect than any artist could give.

Dr. Dickenson, in reply, said he could have his pictures taken, printed, and mounted between sunrise and sunset.

Incomplete Fractures of the Clavicle and Scapula.

Dr. E. H. Bennett presented and explained a specimen of a fractured clavicle, which had been sent to him by Sir William Millar, of Londonderry. The patient was a young man of nineteen, who was killed by a quantity of masonry from a wall falling on him. He sustained fractures of the top and base of the coracoid process, and also fractures of the body of the scapula and clavicle, and died partly from the shock and other injuries which he had sustained, and partly from bleeding from the subclavian or innominate vein, either of which had been ruptured. The clavicle presented at its sternal end a complete dentate fracture, and at its middle an incomplete fracture involving about half its thickness. The surfaces had been displaced by the bending of the bone without fracture of the remaining half, and remained unreduced and unreducible unless by a completion of the fracture of the bone. The base of the coracoid process of the scapula presented also a fracture of the same character. Dr. Bennett briefly reviewed the literature of incomplete fractures, and particularly referred to the rarity of recorded pathological examinations of the lesion in the clavicle. He cited the opinions of Boyer as chargeable with originating the idea that such injuries were impossible—opinions which, however, were set aside in regard to most of the long bones, but were still maintained almost absolutely by some

writers with regard to the clavicle. He directed attention to the two forms of greenstick fracture of the long bones—the complete and incomplete forms—and insisted on the importance in practice of recognising the existence of them, as in the incomplete form considerable force must be employed to effect the reduction. He condemned the doctrine of Jurine that greenstick fractures may be left to straighten themselves, and also the teaching that such injuries were confined to childhood, pointing out that in the specimen before the meeting, and in others published by Prof. Smith and by himself, the fractures of the incomplete form had been observed in individuals of seventeen, nineteen, and twenty-one years of age.

DR. HAMILTON doubted the propriety of regarding the specimen as an ordinary greenstick fracture, a view from which Drs. STOKES, CROLY, and GUNN dissented in concurring with the author of the paper.

Ichthyosis of the Tongue with Malignant Degeneration.

MR. C. COPPINGER brought forward a case of so-called ichthyosis or leucoma of the tongue, and exhibited the organ itself, which he had excised by the method adopted by Mr. Whitehead. He also showed microscopical sections of an old papillary growth which existed on it, and of a more recent and distinct patch of disease which had undergone degeneration and was the seat of a typical epithelial cancer. The patient from whom the tongue was removed was a man aged sixty-three. The old disease was a simple papilloma, which had existed for five years and had never ulcerated or caused pain, and which there was no reason to look upon as of a malignant nature. The sections of it, nevertheless, exhibited the globe nests or pearls which were until recently described as characteristic of epithelial cancer, and the simple pressure of which has been so much relied on by surgeons in doubtful ulcers of the tongue. These epithelial whorls or nests are evidence only of epithelial proliferation, and not of that heterologous growth of epithelial elements which is really pathognomonic of epithelioma. Their presence in a tumour is therefore no proof of its malignancy. The excision was performed ten days ago. The tongue was divided a short distance in front of the epiglottis, behind the range of circumvallate papillæ, and fully an inch behind the posterior margin of the epithelial ulcer. The lingual artery on the left side was very small, and did not require a ligature, but that on the right side was unusually large, a circumstance often noticeable even in the healthy organ, but which in this case was probably due to the increased vascularity of that side from the irritation of the ulcer. The operation was unattended with difficulty or serious bleeding. There was no subsequent hæmorrhage or constitutional disturbance. The patient can now swallow food well, so that this—the first trial in Ireland of Mr. Whitehead's method of excision—had proved satisfactory.

SURGICAL SECTION.

President—WILLIAM IRELAND WHEELER, M.D., President R.C.S.I.
Sectional Secretary—WILLIAM STOKES, F.R.C.S.I.

Friday, November 9, 1883.

The PRESIDENT in the Chair.

Living Specimens Exhibited.

MR. M'ARDLE.—(1) Case of fracture of patella; (2) Case of detachment of quadriceps extensor curis from patella.

Specimens Exhibited by Card.

The PRESIDENT.—(1) Hypertrophied mamma, weighing 18¼ lbs, removed from a girl, aged eighteen; (2) cast of mammary tumour; (3) portion of skull removed for tympanic caries; (4) foot removed above ankle-joint for extensive caries. MR. STOKES.—(1) Excision of the knee: parts removed in, patient aged thirty-two; and (2) parts removed in, patient aged ten.

Inaugural Address.

The PRESIDENT delivered an inaugural address on the progress of Surgical Science.

Paper.—Fractured Patella.

MR. COPPINGER exhibited a specimen of osseous union in a patella removed from a woman, aged sixty-three, who died from heart disease three months after the injury. He read a paper on the subject, disclosing that there was a distinct history of fracture from muscular violence, and there was at first considerable effusion into the knee-joint, with separation of the fragments. The close union of the fracture was attributed to an attack of inflammation of the parts in the neighbourhood of the patella, leading to an increase in the supply of blood to the seat of the fracture, and to early and complete absorption of the liquid effused into the joint. The specimen showed a simple transverse fracture united by bone, but the fragments were joined at an angle, proving that the fractured surfaces of the bone had been displaced to some extent forwards. He recommended that the treatment for ordinary transverse fractures of the patella with separation should include careful attention to position, the early removal of effused fluid and blood from the joint by aspiration, if necessary, and the subsequent application of a plaster-of-Paris case to prevent flexion of the limb. Mr. Lister's method

of freely opening the joint and suturing the patella was advocated for cases of ununited fracture or ligamentous union, but objected to as a routine treatment for ordinary cases on the following grounds:—The operation is hazardous, has not received a sufficient trial, and even in careful hands may be complicated by the accidental entrance of septic matter into the joint. The patient is exposed to the danger of the subsequent occurrence of a compound fracture with open wound of the knee in those cases in which the patella may not prove to have been united by callus of great strength. The foreign body in the patella, consisting of a piece of stout silver wire, may prove at any time a source of trouble and danger to the patient.

Mr. Thomson congratulated Mr. Coppinger upon having confined himself to two or three questions for consideration in the discussion of a subject about which so many varieties of opinion existed. Mr. Coppinger had especially referred to the question raised lately by Lister with reference to the suture of fractured patellæ, not only when they have been ununited for a considerable period, but immediately after the primary accident had occurred. He had also referred to a very remarkable case which he (Mr. Thomson) was fortunate enough to see—namely, one in which the late Mr. Amphlett had sutured the fragments of a fractured patella for want of union, and of which the result, so far as bony union was concerned, was perfect. Unfortunately, however, the joint was not a perfect one, not such as Lister had described, but was flexed at a certain angle; there was no movement in it, and (as he had described) the patient, when here in Dublin, slipped one evening, and ruptured the joint completely across, refracturing the patella. As the joint was excised next morning an opportunity was afforded of examining carefully the condition of the parts, and it was found the patella had undoubtedly united by bone. But in discussing this operation, and in reading a paper upon it at the British Medical Association, at Worcester, he objected to a procedure of the kind being advocated in cases of recent fracture of the patella, not to speak of ununited fracture of the patella; because rarely, if ever, had he seen a case in which, although there had not been bony union, the patient was not able to move about comfortably. He had had himself in hospital a man with two fractured patellæ, who fell from a fort wall in India, during the Mutiny, breaking both the patellæ. The fragments were united at a distance of some inches by a fibrous band, and he was still able to go about comparatively with great comfort. In going up and down stairs, however, he had to be cautious, but on the level ground he got on pretty much as anybody else did. Of course every surgeon had thought sometime or other that he had got the exact plan of securing bony union in fractured patella, and a number of apparatus had been produced from which they expected that bony union would be the result of their application. He confessed, however, he had

never seen a case of bony union of the patella, nor did he know they were anxiously to look forward to the patient being compelled to pay a penalty of considerable discomfort in submitting to the application of the elaborate apparatus referred to, not to speak of incision of his joint, unless there was some decided gain to be achieved. Concerning the more important question of opening the knee-joint, he entirely concurred with Mr. Coppinger in saying that upon no ground, except where the patient would have an absolutely useless limb, was it justifiable. Certainly it was not in a case of recent fracture of the patella. In the hands of competent persons, who comprehended the Listerian method, he was satisfied the operation would be safe. Lister had produced seven cases in which the operation had been done with very great succes. It must be remembered that these were the first cases, and not only did all his cases recover with bony union, but some recovered with joints that could be flexed to the extent of a right angle. Now, if they opened seven knee-joints successively by the ordinary so-called antiseptic methods, he would like to know what would be the result. But nevertheless he certainly should not recommend the operation to be done at all, except by the most competent hands, and therefore he objected to the procedure being preached as a practice to be adopted. They were not always sure such cases would fall into competent hands in the practice of the Listerian method. At the same time, while dissenting from the view Lister had taught in the address lately given to the Medical Society, in no sense did he abate one jot of his belief in the applicability and thorough truth of the Listerian method. The Listerian method was not dead in Dublin, and it was not dead, he was glad to say, in the surgical world.

DR. MAPOTHER did not think he had ever received from the reading of any communication a greater shock than from reading in the *British Medical Journal* the address of Professor Lister on fracture of the patella. For contempt of risk it exceeded anything he had ever conceived. In a recent simple transverse fracture of the patella an incision was to be made two inches long in front of the bone, another opening made, and the cavity of the synovial membrane washed out in order to produce bony union. That such a statement should be put forward in these days almost exceeded credibility. In the case of a transverse fracture of the patella there was scarcely a doubt that by position, a posterior splint, and application of strong adhesive rubber plaster above and below, the fragments could be kept very closely together, and he believed that ligamentous union was very often better than bony union, even if they could get bony union, which he believed they could not. In fracture of the patella, allowing the synovia to flow completely through the fragments, bony union was out of the question. He preferred close ligamentous union between the two fragments. Many instances of fractured patellæ occurred in father and son, and it was

well known as a usual thing that if a man broke one patella he was apt to break another. He thought there was a hereditary tendency to the injury. It might be accounted for by congenital shortness of the muscular apparatus. On reading Lister's paper it occurred to him that in many forms of fracture of the clavicle the two fragments could be kept together by suturing; but in fracture of the patella the practice hc advocated as to the greatest synovial cavity seemed to be attended with extraordinary danger.

Mr. Barton, referring to Mr. Coppinger's remark that osseous union was evidently not the best to be attained in fracture of the patella, took it as proved by the complicated apparatus in use for many years, and the theories put forward that surgeons were not satisfied with the result of ligamentous union; and the observations of Mr. Thomson and Dr. Mapother proved the same. Dr. Mapother had observed that a man who had broken one patella was apt to break the other. Why? Because the broken patella united by ligament was weak. Though the patient might get on well, he did not get on as well as could be wished, and therefore bony union was, if possible, to be attained, and they were not to rest satisfied with ligamentous if they could get bony union. With the tremendous pull upon it right across the end of the femur, nothing but the firmest union would give support to the body and firmness of tread. However close the ligamentous union might be, it elongated and the limb got weaker as the patient used it. Whatever exception might be taken as to the advisability of drilling the fragments, as Lister had pointed out, still that had been done with perfect safety. The joint of the patella had been drilled and sutured with perfect immunity from inflammation and absolute security from the danger that would accrue without antiseptic measures. To say antiseptic surgery was dead in the face of such results was entirely out of court. He did not advocate the general adoption of the procedure in all recent fractures, for he had attempted the operation of suturing the olecranon process, and he knew the difficulties that attended it, combining the possibilities of success and the danger of failure.

Mr. Corley said that one point had been demonstrated—namely, that surgical history repeated itself. At a former discussion on the subject the President (Mr. Wheeler) was the exhibitor of an apparatus for producing bony union, it being considered a desideratum. On that occasion he made the observation that it was one of the cases in which every surgeon who began practical surgery thought he could devise an improvement on his predecessors; and sometime afterwards Mr. Wheeler showed a patella which exhibited bony union, the inference being that it resulted from the application of the apparatus. But to-night they had a patella in which bony union was got without any apparatus at all, because Mr. Coppinger's apparatus could scarcely be said to have

any effect in producing bony union. Thus they had the two extremes—an elaborate apparatus shown as producing bony union, and another in which it had been produced practically without any apparatus, while there were surgeons who denied that bony union could occur.

MR. M'ARDLE observed that the case he exhibited was one treated by rubber plaster—a piece above the patella and one below it drawing the parts together. The leg could be flexed now as well as the one the patella of which was not broken; and therefore if such a result could be had by simply strapping, an elaborate apparatus was not required. He did not believe it was necessary to cut into the knee-joint to procure bony union. The second case he had exhibited was one of detachment of the quadriceps extensor curis from the patella, and in that, though the muscle was extended up to the middle of the thigh, with the rubber plaster he had been able to bring it down. With Mr. Barton's remarks about the lengthening of the constricture he did not agree.

DR. BALL called attention to the fact that one surface of the patella was bounded either by cartilage or by synovial membrane, and the other was subcutaneous; and the formation of bone around the fracture occurred only where there was a large amount of areolar or lean muscular tissue. In fracture of the tibia there was scarcely any adventitious formation of bone. Unless the fragments of the patella were in absolute apposition the union by bone was almost impossible. Union of bone in fracture of the patella was not so great a desideratum. Mr. Hutchinson had mentioned a case of fracture supposed to be united by bone. After the patient left hospital he refractured his patella and was treated by another surgeon, with the result that the fragments were separated to some extent, and fibrous union existed. Mr. Hutchinson, having seen the patient, was bound to admit that the result of the second fracture of the patella was more useful than that when it was supposed to be united by bone. He had himself a case in Sir Patrick Dun's Hospital in which the fragments were considerably separated, and there was effusion into the knee-joint, so that it was impossible, by any mechanical means, to bring the fragments into apposition, and he adopted Mr. Hutchinson's method of aspirating the knee-joint after removing the fluid. The fragments were brought together, and the man left hospital with the fragments in as close apposition as could be wished.

DR. H. FITZGIBBON asked did Dr. Ball perform the operation according to Lister's method.

DR. BALL—The operation was conducted under the spray, and with all antiseptic precautions.

MR. STOKES, adverting to Dr. Mapother's statement that, after reading Professor Lister's address he experienced one of the greatest shocks he ever had in his life, said that, after reading the same address himself, he had not for many years past experienced a keener sense of pleasure, for

it recorded seven surgical results which could only be characterised as brilliant—results which had hardly ever been equalled, and never surpassed. Although he did not concur with Mr. Thomson in thinking they should not hope for, or care for, osseous union in those fractures, yet the surgeon who operated undertook, as Lister himself had said, a tremendous responsibility. Even occasional failure, in spite of the most careful antiseptic Listerian precautions, should make them very slow in recommending or performing the operation until some method of carrying out antiseptic practice more reliable than that now used and advocated by Lister was discovered; and that that method would be discovered he had no doubt whatever.

Dr. R. M'Donnell said the really important question for the surgeon always to consider in a matter of this kind was—Would he conscientiously and honestly, being in the position of the patient, submit to the operation himself? It was very difficult to do that, but still they could make some attempt at it. In considering the brilliant cases mentioned by Lister, which were a very important addition to surgery, and having regard to Listerism and its results, was there a single surgeon present who, if he fractured his patella, would submit to have his knee-joint opened, the fragments stitched together, and a drainage-tube put through the joint? That was the way conscientious men should look at a matter of the kind.

Mr. Tufnell said that was the practical way of putting the question to the test.

Dr. Lentaigne said he had such perfect confidence in the Listerian method, though it was said to be dead, that if he fractured his patella, and his limb was crippled so that he could not use it, he would without hesitation submit to the operation at Mr. Lister's hands.

The President desired to make a few remarks as his name had been mentioned, and he promised to be brief owing to the lateness of the hour, and also because, in publishing upon the subject of fracture of the patella, he had explained the use of the splint that he employed, and the means whereby it provides against arterial pressure, tilting of the fragments, and soforth. He had drawn attention to the fact that the cause of the displacement of the lower fragment was gravitation and not the ligament of the patella, as Malgaigne erroneously supposed. Undoubtedly, as he had often stated, in fractures, bony union might be obtained without the application of any apparatus. But this result was procurable only in cases where the ligaments of Barkoff were intact, and consequently opposing the quadriceps extensor muscles. This result was, however, impossible in wide separation of the fragments. In the case which he exhibited of bony union resulting from the use of his own splint, the separation was approximately the width of his two fingers (about two and a half inches). That case was seen by Mr. Colles, Mr. Butcher,

and Mr. Tufnell, and ultimately the use and perfect motion of the joint was recovered. About two years afterwards the man died of phthisis in the Richmond Hospital. Through the courtesy of Dr. Gordon he obtained the patella, in which was found complete bony union. The patella was examined by Professor Macalister, and seen by Mr. Hamilton and others. He was confident the result was attributable to the use of his splint, with which he had since produced similar successes, although happily there were not in these cases the same means of verification. In his opinion the best attainable result was bony union, which he held to be fully authenticated by the statement in Professor Haughton's "Animal Mechanics," that every portion of the human structure was organised with the object of rendering the greatest possible amount of work. Mr. Hutchinson's statement as to the separation of the fragments from effusion was untenable. As to Mr. Lister's treatment of fracture of the patella—opening the joints and suturing the fragments together—he would make no comment beyond remarking that in his recent publication Mr. Lister made drainage and cleanliness the prominent essential factors. He regretted that his remarks on antiseptic surgery were mistaken. He had never said that antiseptic surgery was dead; but he did say that Lister's theory was dead, and he would say it again with emphasis, because it was true.

Mr. Coppinger, in reply, said the President's observation was that Listerism was dead.

The President.—That Lister's theory was dead.

Mr. Coppinger said if the President's remarks applied to Listerism it was open to question. As regards bony union, it was obvious the patella would not be where it was if a bone was not the proper structure. But what he had suggested was that inefficient bony union was much more dangerous than fibrous union and much more liable to lead to dangerous injury, such as a compound fracture into the knee-joint—an injury which would not occur if the union was by fibrous tissue. The speakers had concurred in the views laid down in his paper, and there was no surgeon who considered Mr. Lister had made a sufficiently strong case for such serious treatment as opening into the knee-joint.

The Section adjourned.

MEDICAL SECTION.

President—William Moore, M.D., President K.Q.C.P.
Sectional Secretary—A. N. Montgomery, M.K.Q.C.P.

Friday, December 16, 1883.

The President in the Chair.

Living Specimens.

Dr. J. M. Redmond exhibited a case of compression myelitis. Mr. Lentaigne showed a case of empyema treated successfully by drainage and antiseptic irrigation. Dr. C. F. Moore presented a child suffering from degenerate varicella.

The President's Address.

The President delivered a brief opening address on the correlation of symptoms in disease. He emphasised the necessity of teaching students the correlation of diseases as a factor of great importance in prognosis. Before the physician could begin to correlate symptoms he must, however, be familiar with symptoms *per se*. A thoroughly educated man, conversant with the correlation of symptoms in disease, could say on ascertaining the pulse and temperature that "such a man was in typhus; or another was in pneumonia; or a third was in enteric fever." Thus the knowledge he recommended gave the physician a commanding advantage in the diagnosis, and, therefore, in the treatment of disease.

Clinical Note on Enteric Fever.

Dr. J. W. Moore read a clinical note on enteric fever. [His communication will be found at page 436.]

The President remarked that the treatment of enteric fever by small frequent doses of calomel was a long-established one.

Dr. Henry Kennedy hoped that the treatment detailed in the note would not be generally carried out. He strongly objected to large repeated doses of calomel. To the use of cold baths and quinine for reducing high temperatures he also took exception, and he compared the unfavourable results obtained in Germany and in London with the low rate of mortality experienced by him in this fever in Dublin.

Dr. MacSwiney referred to the remarkable powers of calomel in destroying microscopic organisms, and suggested this as an explanation of the success obtained by large repeated doses of calomel in the treatment of cholera, as introduced by Eyre.

Dr. Finny pointed out that while Dr. Moore had spoken of the effect

of mercury in curtailing fever, he had not in his case used it to the extent justified by its repeated antiseptic properties. In his experience quinine in large doses certainly did reduce temperature for some hours, but did not shorten the course of the fever. The packing adopted by Dr. Moore obviously lowered the temperature by inducing profuse diaphoresis; but the point of greatest interest diagnostically was the want of correlation between the pulse and temperature during the fever.

Dr. Doyle said he had for some years used calomel in suspected typhoid fever, without, however, succeeding in stopping a case.

Dr. J. W. Moore, in replying, said that as the large doses of calomel passed through the system much more quickly than smaller ones, there was the less risk of its conversion into corrosive sublimate. The rate of mortality in enteric fever in Cork-street Hospital was very low—and the case in question recovered. He quite agreed with Dr. Finny as to the transitory nature of the reduction of temperature by quinine; but he thought that in a disease where hyperpyrexia alone might threaten life, it was of considerable importance to have a reduction of temperature even for twenty-four hours. With regard to the correlation of pulse and temperature, he had mentioned in his paper that the pulse observations were taken only in the morning.

Note on Hyoscyamine.

Dr. R. A. Hayes read a note on hyoscyamine, which drug he had employed in the treatment of a case of tremor of the left arm. There was a history of injury to the left shoulder two years previously, but the tremor did not commence until eighteen months afterwards. The patient was admitted to Dr. Steevens's Hospital, 15th October last, and two days subsequently was given $\frac{1}{16}$ gr. hyoscyamine in pill without any effect. Next day $\frac{1}{16}$ gr. morning and evening relieved the tremor, and the following morning $\frac{1}{8}$ gr. was given at 11 o'clock, causing at 2 p.m. considerable delirium, which continued during the day, but the tremor ceased. The next morning $\frac{1}{16}$ gr. was given, delirium again appearing at 3 p.m., and not completely passing off until the following morning, the tremor continuing less. The patient's accommodation being now quite paralysed, and he not having had refreshing sleep since getting the $\frac{1}{8}$ gr. dose of hyoscyamine, the drug was omitted; but the tremor at once returned, and shortly became very marked. After three days the hyoscyamine was resumed, $\frac{1}{32}$ gr. being given thrice daily. In two days the tremor was better, but after six days, although the tremor was somewhat better, the ciliary muscle having again become paralysed, the patient objected to the further use of the remedy, and it was discontinued. During the administration of the smaller doses the pupils seemed unaffected, although the accommodation was so completely influenced that reading was impossible. Whilst the patient was under the influence of

the larger doses their possible effect on the iris was unfortunately marked by the still remaining dilatation, resulting from atropia which had been applied to facilitate an ophthalmoscopic examination.

DR. HENRY KENNEDY mentioned the case of a gentleman in whom alarming symptoms were produced by $\frac{1}{16}$ gr. taken in pill shortly before dinner.

DR. W. G. SMITH asked whether Dr. Hayes had used the drug hypodermically, and also what was its appearance, as the doses mentioned in the books varied widely. This was explained by the fact that there were three forms of the drug in the market—viz., the impure substance, the pure crystalline alkaloid, and the brown amorphous substance, with a smell like tobacco. Chemically hyoscyamine and atropine appeared to be isomeric, but their physiological effects differed—hyoscyamine produced less excitement than atropine and was more hypnotic, while the former dilated the abdominal vessels, and the latter did not. He suggested a solution of the sulphate in distilled water as a convenient method of hypodermic exhibition.

DR. MONTGOMERY and DR. DOYLE having joined in the discussion,

DR. HAYES replied, stating that, having made careful inquiries of the source whence the drug was obtained, he was satisfied of its purity. He had, as mentioned in his paper, given the drug in pill. Although apparently serious results had sometimes followed the use of the drug, he was not aware of any fatality consequent on its use.

The Section then adjourned.

SUDDEN DISLOCATIONS DURING ACUTE RHEUMATISM.

IN the course of a case of acute rheumatism, articulations in a bad position may suddenly become dislocated without bony alteration, and without suppuration. These luxations can be reduced instantaneously like traumatic dislocations, and the limb regains its natural appearance. M. Verneuil recently communicated to the *Société de Chirurgie* (*Gaz. Hebdom.*, 9 Nov., 1883) seven cases in which he observed this form of dislocation. At the present time such dislocations are attributed to hydrarthrosis. M. Verneuil does not deny that they may be due to hydrarthrosis, but he has never determined its existence. In two cases of luxation of the knee there was no fluid present. The muscular system plays a very important part in the production of luxations—paralysis existing in one group of muscles, and contraction in another muscular group. It is important, therefore, to be on the watch for faulty positions of the joints in rheumatism. The reduction of these dislocations is easy, and subsequently the limb resumes its normal form and functions.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F. R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, November 3, 1883.

Towns	Population in 1883	Births Registered	Deaths Registered: Total Number	Deaths Registered: Under 1 year	Deaths Registered: At 60 years and upwards	Deaths from Seven Zymotic Diseases: Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	Deaths from Phthisis	Death-rate per 1,000: From all causes	Death-rate per 1,000: From seven Zymotics
Dublin, -	349,685	722	685	151	140	–	–	47	3	8	15	31	82	25·5	3·9
Belfast, -	214,022	507	413	100	61	–	-	29	2	17	10	22	52	25·1	4·9
Cork, -	80,124	156	124	13	35	–	2	1	1	1	10	2	16	20·1	2·7
Limerick, -	38,562	88	70	13	14	–	6	3	3	4	2	4	6	23·6	7·4
Derry, -	29,162	45	68	7	13	–	–	15	–	1	2	2	5	30·3	8·9
Waterford,	22,457	42	31	4	12	–	–	1	–	–	–	1	5	18·0	1·2
Galway, -	15,471	41	15	1	4	–	–	–	–	–	–	–	2	13·2	—
Newry, -	14,808	19	28	4	13	–	–	–	-	1	-	–	2	23·5	0·9

Remarks.

The mortality in the eight towns ranged from 30·3 per 1,000 of the population annually in Derry to 13·2 in Galway. In Dublin it rose slightly and in Belfast considerably above the rate in the previous four weeks (24·7 and 20·8 respectively). In Derry, Limerick, Belfast, and Dublin the mortality from seven chief zymotics was high—the respective rates being 8·9, 7·4, 4·9, and 3·9 per 1,000 per annum. The death-rate in twenty-eight large English towns was 20·0, compared with 23·5 in the sixteen largest Irish towns, 19·0 in London (included in the twenty-eight towns), 18·0 in Edinburgh, and 23·6 in Glasgow. In Dublin, deducting the deaths (13 in number) of persons admitted into public institutions from localities outside the registration district, the rate of mortality becomes 25·0 per 1,000 per annum, that of the city proper being—with the same correction—27·6.

Acute febrile zymotics were credited with 107 deaths in Dublin, compared with an average of 112·0 in the corresponding period of the

previous ten years, and against 123 deaths registered in the preceding four weeks. The 107 deaths include 47 from scarlet fever, 3 from diphtheria, 8 from whooping-cough, 15 from fevers, and 31 from diarrhœal diseases. The fatal cases of scarlet fever are still on the increase—they were 9 in the four weeks ending September 8, 29 in the four weeks ending October 6, and 47 in the four weeks now under discussion. With the autumnal fall of the temperature, renal dropsy and uræmic convulsions in scarlet fever have shown an increasing prevalence and fatality. Of the 15 deaths referred to "fever," 4 were ascribed to typhus and as many as 11 to typhoid. In connexion with the epidemic of scarlet fever, it is worth while to note that 3 deaths were attributed to diphtheria. As to whooping-cough, 7 out of its 8 victims were children under five years of age, including one infant under twelve months. Of the 31 patients who fell victims to diarrhœal maladies, 21 were under five years of age, including 12 infants under twelve months.

Scarlet fever shows a widespread prevalence, especially in the N., E., and S.W. of Ireland (Belfast 29 deaths, Derry 15, Dublin 47, Limerick 3). Diphtheria killed 3 persons in Limerick, 2 in Belfast, and 1 in Cork, besides 3 in Dublin. Whooping-cough was very fatal (17 deaths) in Belfast. Measles caused 6 deaths in Limerick and 2 in Cork. In the eight towns diarrhœal affections were credited with 62 deaths, against 90 in the preceding four weeks.

In the Dublin registration district the births were 722 and the deaths 685 in number. The births included 372 boys and 350 girls. The deaths of infants under a year fell from 163 in the previous period to 151; those of persons aged 60 or upwards rose from 139 to 140.

In the eight largest towns phthisis pulmonalis caused 170 deaths, compared with the same number in the preceding four weeks and 180 in the four weeks ending September 8. In Dublin the deaths rose from 71 to 82, in Belfast from 47 to 52. In Cork, on the other hand, they fell from 28 to 16.

Diseases of the breathing organs slew 98 individuals in Dublin, compared with 92 in the previous period and a ten-years' average of 123·0. The 98 deaths included 57 from bronchitis (average = 82·1) and 13 from pneumonia (average = 19·5). These favourable statistics were brought about by comparatively mild weather during the greater part of October. The mean temperature of the four weeks was 50·0° in Dublin, 48·8° in Belfast, 51·4° at Roche's Point, Co. Cork, 50·7° at Greenwich, and 48·2° in Edinburgh.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of October,* 1883.

Mean Height of Barometer, - - -	29·943 inches.
Maximal Height of Barometer (at 9 a.m. of 8th), -	30·555 „
Minimal Height of Barometer (at 8 a.m. of 16th), -	29·066 „
Mean Dry-bulb Temperature, - - -	49·6°.
Mean Wet-bulb Temperature, - - -	47·6°.
Mean Dew-point Temperature, - - -	45·4°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·304 inch.
Mean Humidity, - - - - - -	85·8 per cent.
Highest Temperature in Shade (on 8th), - -	63·8°.
Lowest Temperature in Shade (on 22nd), - -	34·5°.
Lowest Temperature on Grass (Radiation) (on 22nd)	30·9°.
Mean Amount of Cloud, - - - -	57·3 per cent.
Rainfall (on 16 days), - - - -	2·205 inches.
Greatest Daily Rainfall (on 24th), - - -	·445 inches.
General Directions of Wind, - - -	W., S., and N.W.

Remarks.

Changeable as October generally is, this month proved no exception to the rule. The mean temperature was as nearly as possible equal to the average of the previous eighteen years, but it is noteworthy that the first week was decidedly colder than the last week, and that a remarkable increase of temperature occurred on the 7th, lasting for several days. The rainfall was considerably below the average (2·205 inches compared with 3·192 inches), and the rainy days (16) also fell short of the average 17·5).

The month opened with an atmospherical depression lying over Denmark and Holland and rather steep gradients for northerly winds in the United Kingdom, where temperature was low and the weather squally and showery. On the night of the 3rd a cyclonic system travelled quickly south-eastwards across Great Britain. At this time lightning was seen to the eastward from Dublin. Cold and broken weather continued until the 7th, when a series of deep depressions began to pass eastwards across the extreme North of Europe, bringing strong westerly winds and a rapid rise of temperature to the British Islands. At this time the barometer was unusually high over the South of Ireland, England, and France (30·61 inches in Paris at 8 a.m. of the 8th). Along the northern edge of this area of high pressure a current of warm air flowed over Ireland and Scotland, causing an extraordinarily rapid rise of temperature in the extreme N. of the latter country—at 8 a.m. of Sunday, the 7th, the thermometer stood at 60° at Wick, or 21° higher than it did

twenty-four hours previously. On the 8th the thermometer rose to 74° at Aberdeen — a reading higher than any recorded at that station during the past summer. The 10th was a dull wet day in Dublin, and in Scotland temperature gave way suddenly. Friday, the 12th, was at first sharp and fine, but with a southerly wind came warmth and cloud, with solar halos at times, as a rather deep depression passed northwards outside the W. coast of Ireland. On the evening of the 14th there was a very brilliant sunset. After the 15th the barometer for several days was uncommonly low over that part of the North Atlantic which lies between Ireland, Scotland, and Norway, while a number of secondary or subsidiary depressions made their way eastwards across the British Isles, being accompanied in their passage with squalls of cold rain and hail, and in many instances by lightning and even thunder. On the evening of the 15th a lunar halo was seen, and after 11 p.m. vivid lightning frequently played along the eastern horizon. A bright aurora was visible from the N. of Scotland the following night. On the 21st a temporary lull occurred, and at night there was the first decided frost of the season. A solar halo on the 22nd ushered in a period of warmer but unsettled weather, rain falling at times with squalls. A sharp thunderstorm and heavy rainfall were reported from Stornoway in the Hebrides on the evening of the 23rd. About midnight on the 24th temperature rose to 59·4° in Dublin, as an extremely deep depression advanced rapidly to the neighbourhood of the Shetland Islands, where the barometer was down to 28·57 inches at 8 a.m. next day. The weather now improved, and from the 27th was mild and fine under the influence of a high pressure system which spread all over Western Europe. In Ireland light and warm southerly airs and cloudy skies prevailed; in Great Britain, calms and local fogs, with a somewhat lower temperature, were observed.

In Dublin lightning was seen on the 3rd and 15th. Solar halos were observed on the 5th, 12th, 19th, and 22nd; lunar halos on the 11th and 15th. The atmosphere was foggy on the 8th, 12th, and 29th. A partial lunar eclipse was uncommonly well seen on the morning of Tuesday, the 16th.

EXTEMPORANEOUS METHOD OF DISLODGING FOREIGN BODY IN ŒSOPHAGUS.

For dislodging a foreign body in the œsophagus by forcing it downwards, an ordinary carriage or riding whip, knotted far enough from the end to insure the proper degree of flexibility, may, according to Dr. Levis, be an efficient expedient in an emergency.—*Polyclinic*, Aug. 15.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

FORMS AND TREATMENT OF ANGINA PECTORIS.

Dr. Henri Huchard, in the course of an elaborate disquisition on "Angina Pectoris" ("Des Angines de Poitrine," *Revue de Médecine*, August, 1883), classifies the several pathogenetic influences in five groups:—The organic form; the nervous; the reflex; the diathesic; and the toxic. These causal conditions admitted, the therapeutical indications are at once manifest. It may be well to clear the ground by a proper definition of the pathogeny of each class. By the organic form is meant an ischæmia of the heart-muscle, the result of calcification and narrowing, or complete obstruction of the coronary artery. The nervous form is that condition of the cardiac nervous mechanism which has its origin in the state of the nervous system accompanying hysteria, neurasthenia, hypochondria, exophthalmic goître, and in the masked epilepsy which assumes the objective type of angina pectoris. The reflex form, as the term implies, is a disturbance at some point in the sphere of distribution of the pneumogastric nerve, reflected over its cardiac branches. Irritation of the peripheral nerves at other points may, under some circumstances, be referred to the heart, and induce paroxysms of angina pectoris. The examples of diathesic origin occur in gout, rheumatism, diabetes, and syphilis. Lastly, the toxic cases are caused by the abuse of tobacco, tea, coffee, and, indirectly, of alcohol, &c. If the limits of the pathogenetic influences inducing angina pectoris be enlarged to include all the factors above mentioned, the severe definition heretofore given of the malady must be correspondingly modified. An entirely functional state must be admitted to exist, and, indeed, must be regarded as relatively and actually of more frequent occurrence. That form characterised as organic, in which various morbid conditions of the heart exist, are by Huchard entitled *true* angina pectoris, and the functional disorders *false* angina pectoris. The former is the malady described by Heberden, Fothergill, Stokes, and other classical English authorities. In few maladies are the improvements in our therapeutical resources more conspicuous. In the use of the most effective remedy for the relief of the paroxysm, an admirable illustration is given of the remarkable value of the contributions made to therapeutics by physiological investigations. We refer to the use of the amyl nitrite in this affection—an addition to scientific medicine which we owe to Dr. Lauder Brunton. Remarking the high tension of the vessels in certain cases of angina pectoris,

Dr. Brunton made the fortunate deduction that this condition might be quickly relieved by amyl nitrite, which promptly lowers vascular tension. All the world knows how completely successful the expedient has proved in actual practice. This explanation of the relief afforded by the remedy is not universally admitted. For example, Filehne holds that the relief is due to paresis of the vagus, and Dr. George Johnson that the arrest of the pain in the cardiac nerves is the real factor, the rise in the vascular pressure being secondary to this pain, since the same result follows from irritation of the sensory nerves in any part of the body. Huchard offers an explanation of the good effects of amyl nitrite which seems to us eminently satisfactory. He thinks that the remedy acts by increasing the circulation in the cardiac muscle, which is much impeded by spasm or calcareous changes in the coronary artery, and that it lessens the work of the heart by dilating the peripheral vessels. Not all cases of angina pectoris are accompanied by peripheral vascular spasm, and hence this explanation will not satisfy all the requirements of a perfect theory. If the curative effect of amyl nitrite is not explicable in a satisfactory manner, its value is none the less firmly established, although failures have been reported. The most facile mode of inhalation is by means of delicate glass vesicles—perles—which may be broken in a handkerchief and readily inhaled with slight loss. Nitroglycerine corresponds in action, and may, therefore, be substituted in some forms of the malady. It is less prompt, and the susceptibility to its action is so varied that some preliminary trials are necessary to determine the proper dose. Whilst nitroglycerine is much inferior to amyl nitrite for the relief of the paroxysms, it has a very important place as a remedy in those cases of the functional disorder characterised by repeated seizures at short intervals. The remedy next in importance is morphine subcutaneously. Huchard maintains the thesis that morphine diminishes the contractile energy of the heart, and lessens the vascular tension by dilating the peripheral vessels. Not to mention the mass of opinion in opposition to this view, it will suffice to give the observations of Schüller, who studied the effects of morphine on the vessels of the pia-mater *in situ* and ascertained that this agent first, and briefly, dilates the vessels, but this is soon followed by decided contraction. The unquestionable good effects of morphine in angina pectoris must, therefore, be sought on other grounds. The two chief reasons for its utility are the relief of pain, and the slowing of the heart movements, permitting a more abundant supply of blood to the heart muscle. The best results in the severest cases, are said to be had from a combination of these remedies by the inhalation of amyl nitrite and the subcutaneous injection of morphine. When the heart's action is very feeble, as appears to be the condition of the organ in some examples of angina pectoris, the subcutaneous injection of ether, and the intravenous injection of ammonia, are highly useful. In such

cases, also, atropine may render important service. The inhalation of ethyl bromide, cautiously carried on, may also prove in a high degree efficacious. This agent has also been employed with excellent results, by the hypodermatic method, in place of ether. With the means now at our disposal, the treatment of the paroxysms of angina pectoris is most effective. It is, however, more desirable to prevent the attacks. This fortunate result may be attained by the adaptation of remedies to the various pathogenetic conditions. Have we to deal with true angina pectoris—with the organic form? Are there also at work in the causation of the attacks any of those influences concerned in the production of the pseudo-affections? Is there a nervous, a diathesic, a toxic, or a reflex element added to the existing organic basis of the seizures? It would seem needless to assert that all causes of disturbance included under these heads, and all unfavourable hygienic influences of every kind, should be withdrawn. Our space will only permit some references to the remedies properly so-called. As in the organic form the condition of chronic arteriitis is the chief source of mischief, it becomes exceedingly important to arrest the progress of this destructive change. None of the measures hitherto proposed, unless the treatment of carbonate of soda—the suggestion long ago made by Bretonneau is an exception—has exercised any remedial influence. We are, therefore, fully aware of the assumption involved in our recommendation of the carbonate and iodide of ammonium given conjointly with cod-liver oil as the most effective treatment for chronic endarteriitis. Huchard concludes that the iodide of potassium or sodium is entitled to rank first as a preventive remedy, and he gives the details of six cases illustrating the remarkable value of this plan of medication. We prefer, to the iodides alone, the combination above referred to, for the following reasons:—In chronic endarteriitis, when the structural changes in the walls of the vessel encroach materially on the lumen, and retard the blood-current, fibrinous deposits take place, and finally thrombi form. The persistent administration of ammonia is the most effective means of preventing these formations by maintaining the alkalinity of the blood. The iodides contribute to this result. Cod-liver oil with the iodides is probably the best remedy for chronic endarteriitis. Besides, by improving the nutrition generally, it tends to give stability to nervous matter. *Sanguis moderator nervorum* is an aphorism of Hippocrates. Arsenic serves a double purpose—as a means of stimulating the nutritive functions, and as a moderator of reflex excitability. We have seen cases in which it gave more sustained relief than any other remedy. Under such circumstances, enormous doses are taken with impunity. An apparent tolerance is established, and the large doses, so far from causing gastric disturbance, increase the appetite, improve the nutrition, and induce a condition of mental comfort comparable to that of a favourably acting narcotic. With this mental quietude coincides a calm state of the

reflex excitability. It is in the office of a preventive remedy that nitroglycerine serves so important a purpose. It should be given daily, to maintain the state of diminished vascular pressure. Iodide and bromide of ethyl by inhalation, in quantity far short of that necessary to cause anæsthesia, may also be used daily when attacks are frequent. The bromides also have an important function when reflex excitability is to be moderated. The diathesic and toxic cases are improved or cured by the removal of the causes, and by treatment addressed to the functional nervous disturbance resulting therefrom.—*Medical News.*

THE MORBID CHANGES IN MYXŒDEMA.

VERY few opportunities have been afforded for the study of the morbid anatomy of myxœdema. The "cretinoid state" of Sir William Gull, the mucoid degeneration of Ord, and the pachydermic cachexia of Charcot, rather suggest the cutaneous appearances than throw light on the pathological conditions. Recently M. Henrot, of Rheims (*Le Progrès Médical*, Sept. 15, 1883), has given an account of the appearances in a case observed by him, and as the changes were carefully studied, it may be useful to lay before our readers the more important results of this examination. M. Henrot emphasises the fact that there were no alterations in the skin to account for the characteristic appearances. He found in the cerebrum a considerable hypertrophy of the pituitary body and of the pineal gland. The pneumogastric nerves, the glosso-pharyngeal, the brachial plexus, and the ganglia and fibres of the sympathetic had undergone a notable increase in size. Changes also were found in the meninges of the spinal cord comparable to those which occur in chronic alcoholism. M. Henrot hence concludes that myxœdema consists essentially in a return to the embryonic condition of the subcutaneous, submucous, and general connective tissue under the influence of the hypertrophic changes which occur in the sympathetic system and its annexed organs, the pituitary and pineal bodies, leading to the excessive production of mucin, and the infiltration of the affected organs with this material.—*Medical News.*

OCULAR TROUBLES OF NERVOUS ORIGIN, ESPECIALLY OF DENTAL CARIES.

DR. WEINBERG (*Recueil d'Ophtalmologie*) has studied certain alterations of the eye, which are produced by extra-orbital lesions, chiefly among which is dental caries. These are of two kinds. A decided conjunctivitis, rebellious to treatment. On carefully examining the teeth caries of one or more is found without ever having caused pain. After extraction conjunctivitis immediately subsides. It is clearly a morbid reflex phenomenon. But there are other cases where patients do suffer from toothache, and with whom the conjunctiva is red, the cornea opalescent, slightly

ulcerated, hyperæmia of conjunctiva even provoking a chemosis, sight may become largely disturbed, a very serious complication which may be caused by a different reflex phenomenon—namely, an extension of a dental neuritis to the ophthalmic branch. The most frequent causes are peri orbital neuralgia, next asthenopia, even mydriasis, abscess of the cornea, and exophthalmos, with all its consequences. Irritation of the uterus may bring about ocular troubles, especially keratitis phlyctenulosa, or regular monthly conjunctivitis. The galactophorous glands may, as well as the uterus, be the starting point of a reflex irritation of the eye. There are women who suffer from herpes of the cornea and conjunctiva and parenchymatous keratitis, as long as they nurse their infants, which subside spontaneously as soon as the children are weaned.—*St. Louis Medical and Surgical Journal.*

THE ACTION OF DIGITALINE ON THE HEART AND BLOOD-VESSELS.

MESSRS. HENRY H. DONALDSON, A.B., Fellow of the John Hopkins University, Baltimore, and Lewis T. Stevens, A.B., after a series of experiments on the frog and terrapin, in order to determine the action of digitaline on the heart and on the flow through the blood-vessels, publish their conclusions, in the *Journal of Physiology*, as follows:—1. Digitaline causes a decrease in the work done by the heart. 2. Digitaline, in moderate doses, increases the blood pressure. 3. Digitaline causes a rise of mean pressure by constricting the arterioles, probably through its action on the muscular coats.—*St. Louis Medical and Surgical Journal.*

BROMIDE OF NICKEL.

THE salts of the metal, nickel, have been very little used in medicine—so seldom that their therapeutic value is but little known, and seldom heard of, and that only among the heads of the profession. It would appear that they can, by a judicious exhibition, be of much more utility in certain cases than the other metals, similar salts of which are in daily use with almost all practitioners. These remarks hold good more particularly in the case of that salt of nickel which heads this article—the bromide of nickel. Dr. Da Costa, of Philadelphia, has taken notes of various cases treated by him with the various salts, such as the chloride, sulphate, acetate, phosphate, and the bromide. The specimens of bromide of nickel employed by him were very pure, and he is of opinion the salt had not been previously exhibited by any medical man. It was made by digesting nickel filings in bromine and water, and evaporating to crystallisation. The salt is green in colour, deliquescent, and soluble in water; and in the dose in which it is necessary to give it, it is not offensive to the stomach. It may be exhibited in pill (formed into mass with gum tragacanth), but better in solution. The effect of the other bromides can be easily obtained, and that by a much smaller dose.

Thus, 5 to 7½ grains is an average dose, 10 grains a decided one, and when this is indicated it is better to give 5 grains, soon repeated, as less likely to disturb the stomach. The therapeutic value of the salt is indicated as follows, first, on the *nervous system* :—It relieves headache, especially of the congestive form; it has the power of diminishing or stopping convulsive movements, and it has general quieting tendencies. It has in different cases of Da Costa's (*Med. News*, Sept. 29, 1883) proved beneficial in epilepsy, and though he has not as yet completed his investigation of the subject, he is of opinion that "the preparations of nickel, especially the bromide, will be found additions to our therapeutic resources, and are certainly worthy of more careful study than they have hitherto received." He is of opinion that bromide of nickel slightly lowers the temperature, has little or no influence on the pulse—if any, rendering it somewhat slower—and does not act on the skin or bowels, or on the composition of the urine, the quantity of which may remain normal, or be slightly increased. Its effect on the nervous system is that of a sedative, without, however, producing a weakening or depressing influence. The result shown from a smaller dose than that of the bromides which are generally employed is a striking feature. Nor is this due to the salt having more bromine in its composition. The combining weight of nickel is higher than that of sodium. Sodium is 23·3, nickel 29·5, potassium 39·2. There is, therefore, in the nickel bromide some special action. The trial of this salt in epilepsy led Da Costa to try some of the other salts of nickel, and see if they by themselves had any specific influence similar to those of silver and zinc. The result was (with the sulphate and chloride) that the patients had fewer attacks. But while not inert they had no striking influence—certainly nothing that compared with the bromide salt.

J. Rex J.

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